United States Court of Appeals

for the

District of Columbia Circuit

TRANSCRIPT OF RECORD

No. 1662. October Term, 1906.

Court of Appeals, District of Columbia.

422

JOHN A. BRILL and J. G BRILL COMPANY,

Complainants-Appellants.

v.

THE WASHINGTON RAILWAY AND ELECTRIC COMPANY,

Defendant-Appellee.

BRIEF FOR APPELLANTS.

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For Appellants.

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Court of Appeals of the District of Columbia.

IN EQUITY.

JOHN A. BRILL AND J. G. BRILL COMPANY,
Complainants-Appellants,

v.

THE WASHINGTON RAILWAY & ELECTRIC COMPANY,
Defendant-Appellee.

ARGUMENT FOR APPELLANTS.

The subject of this litigation is an electric street railway car truck, as to the value of which the following is the undisputed testimony of John N. Akarman, an able and experienced electric railway manager:

"I consider the present type of truck in controversy to be the highest development at the present time in the art of truck manufacture."

HISTORY OF THE CASE.

This is an appeal from a decree of the Court below made on final hearing upon a bill to restrain the defendant from infringing upon two letters patent of the United States to G. Martin Brill for improvements in car trucks, and for an accounting.

The letters patent are:

No. 627,898. Claims in controversy 13 and 81.

No. 627,900. Claims in controversy 13, 14, 15 and 17.

Both patents are dated June 27, 1899.

Copies of these patents are at pp. 103 and 119 of the Record.

The bill was filed by John A. Brill, assignee of these patents, and the J. G. Brill Company, manufacturers of car trucks at Philadelphia and exclusive licensees under the patents. (Record, p. 77.)

The Peckham Motor Truck & Wheel Company, of Kingston, N. Y., manufactured the trucks in controversy. That company, about January 1, 1901, passed over its entire plant and truck business to its successor, The Peckham Manufacturing Company, and thereupon retired from business. (Record, p. 233.)

The latter company conducts and controls the defense of this case and is the real defendant. (Record, p. 233.)

The case, therefore, is a case between competing truck builders.

The Court below dismissed the bill, *pro forma*, under the Comity Rule (Record p. 598.)

THE TRUCK OF THE PATENTS IN SUIT—SALES.

The letters patent in suit relate to *pivotal* trucks, two of which are placed under the long-body street cars now in common use. The defendant's trucks complained of may be seen in the streets of Washington. One of them is photographed at page 127.

The truck was invented late in 1895 by G. Martin Brill, and a *parent* patent and two *divisional* patents were taken out for the invention. These proceedings are based upon the parent patent and the second of the divisional patents.

Mr. Brill assigned the patents to John A. Brill, party plaintiff, on July 8, 1899. (Rec., p. 125.)

The J. G. Brill Company, also party plaintiff, has since that date been the exclusive licensee. (Rec., p. 77.)

This record shows the first sale in March, 1896. Thus *Walter S. Adams,* when testifying on the *prima facie* case, put the sales, up to that time, at 7700 trucks (Rec., p. 60, Q. 13), and, when recalled, he testified that up to January 11, 1905, they had amounted to over 8400 trucks.[1]

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[1] Mr. Adams's evidence is based upon his "personal knowledge," which (he said) is confirmed by the "original records" of the J. G. Brill Company. (Rec., p. 60, Q. 15.)

The "original records" referred to were the "order lists" of the company, in which entries of "all orders were made practically immediately." (Rec., p. 61, Q. 19.) Besides this, Mr. Adams had "personal knowledge" of practically all of these orders. (Rec., p. 66, RDQ. 56.)

This evidence is sufficient for the purpose and is as complete as "the nature of the case permits."

The value of these 8400 trucks at $250 each is $2,100,000.

The real defendant, The Peckham Manufacturing Company, has also made very extensive sales of the truck in controversy. Thus, it advertised in the *Street Railway Journal* of May 3, 1902, that there were "over 3000 in use." (See a photograph at p. 163 of Record.)

No evidence of the Peckham Company's sales in the last three years is produced, but if they have only doubled their sales it would appear that nearly $4,000,000 worth of these trucks have been sold and put in use (by both parties).

The vitally important part which this truck has played in the street railway art will appear below.

APPELLEE'S INFRINGING STRUCTURE.

This is shown:

1. By "Complainants' Exhibit, Photograph of Defendant's Car." It is stipulated on page 58 of the Record that the defendant has used and operated in Washington a number of trucks, known as Peckham 14-B-3 trucks, of the construction represented by this photograph. It is reproduced 127 Rec., Vol. II.

2. By "Complainants' Exhibit, Drawing of Defendant's Truck." (Rec., p. 69.) This blue print is found in Rec., p. 128.

3. It also appears in a handsome white metal model offered by the defendant at p. 202 and marked "Defendant's Exhibit, Illustrative Model of Defendant's Truck."

There is no dispute as to the construction of the defendant's truck structure.

NATURE OF THE DEFENSE.

The defendant justifies its truck structure under a patent to Charles F. Uebelacker, No. 635,986, dated October 31, 1899. (See clause 15 of the Answer, Record, p. 11.) This was assigned before issue to the Peckham Company.

The defense goes to question of the validity of the patents in suit, and perhaps also to the question of infringement of the *divisional* patent in suit. The defendant's evidence consists of some earlier patents, none of which show the

combination of the patents in suit, and the testimony of an expert witness thereon—no more. It is the usual defense that this important invention was "obvious to the ordinary skilled mechanic." [1]

HISTORY OF THE DEVELOPMENT OF STREET RAILWAY TRUCKS.

A brief statement of the development of street railway trucks is necessary for a clear understanding of the issues involved in this case. The facts are not disputed. (See *Akarman,* Rec., p. 420, Q. 5.)

It is well known that in the old horse car street railway practice the running gear consisted chiefly of four pedestals which surrounded the axle boxes and were bolted rigidly to the side sills of the car. The car and its running gear were a unit.

When electric motors were first used, an attempt was made to place them upon the car body and to convey the power to one of the axles by a sprocket chain. This was not successful. The motor was subject to the motion of the car body on the car springs and there was too much looseness of parts between the motor and the driven axle. Then motor *trucks* were introduced. In these the pedestals were connected by two side beams. These two parts together constituted the "axle box frame." The car springs (which were all spiral springs) were supported on the axle box frame, and they supported a rigid rectangular frame upon which the car body was removable. The "axle box frame" kept the wheels and axles in parallelism; it was free from the motion of the car springs and served as a support for the free end of the motor, the other end of which was sleeved on one of the axles.

Such a truck was, in effect, a locomotive and could be run with or without a car body resting upon it. It carried an open car body in summer and a closed car body in winter.

With the short cars (12 to 14 feet) used in the early

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[1] The Record shows that the Peckham Company at once appropriated the invention, and thereafter (in that class) practically confined its output to the making of that truck, with great success in making sales. In *A. R. Milner Seating Co.* v. *Yesbera,* 133 Fed. 916 (C. C. A., 6th Cir.) it was held:

"The fact that a defendant has appropriated the device of a patent and has been successful in its sale, is persuasive evidence against him on the defence of anticipation."

days, this practice was successful, but as the length of the car body increased, the extreme overhang of the platform caused an oscillating or galloping motion of the car when rapidly run, and this tendency became a serious evil. It was met and remedied to the satisfaction of the trade, by the substitution of a *combination* of *spiral* and *elliptical* springs (in place of *all spiral* springs) between the "axle-box frame" and the upper frame upon which the car body rests.

This construction of truck was first introduced by the J. G. Brill Company. (Rec., p. 423, Q. 12.) Since its introduction it has been, and to-day is almost universally used under 4-wheel cars.[1]

The limit of the use of single-truck cars was about reached when the car bodies grew to 16 feet in length. An additional length made it necessary to use double-truck cars—that is, car bodies mounted upon two 4-wheel *pivotal* trucks. *At this time there was no pivotal truck* on the market or known to the trade which was suitable for electric street railways. *Steam railroad practice* furnished nothing which could meet the new requirements of electric street railways. Thus, Mr. Akarman testified (Rec., p. 423):

> "Q. 13. You have sketched the history of electric street railway trucks. Will you state whether or not *that art learned anything* from the steam railroad truck art, giving your reasons for your answer?
>
> ("Objected to as incompetent and irrelevant, and as containing an assumption in the use of the term 'art.')
>
> "A. *It did not,* the conditions and requirements being entirely different. The steam railroad truck being a truck that was hauled in practically straight lines, the strains on this type of truck and requirements were entirely different from what they are in a truck that has to be propelled by machinery attached to it. The electric truck's strains were those incidental to the movement of a large weight attached to one part of the truck by means of power attached to the axles. The strains were those incidental to overcoming the inertia

[1] The letters patent to G. Martin Brill on the truck which represented this important advance in the art were sustained by a judgment (*Shipman*, C. J.) in the United States Circuit Court for the Southern District of New York. (*Brill* v. *Third Ave. R. R. Co.*, 103 Fed. Rep. 289.)

of a large body standing still. Again, the turning of short radius curves, and thereby overcoming the centrifugal force, brought about other strains that were not developed in steam railroad practice. Again, the width of the car required a narrower form of construction than used in steam railroad practice, and also the requirement in length of the truck had to be essentially different from trucks used on steam railroads.

"Again, the requirements in electric practice of being compelled to hang the car body within a given distance of the ground, which requirement was made necessary by a limit to the number of steps that could be used in street railway practice to enter and leave the car, was entirely different from the requirements in steam railroad practice.

"The electric truck had to be so constructed as to properly accommodate the motors which are hung on the axle and suspended from the frame of the truck.

"Q. 14. State whether or not there are any differences between the electric practice and steam practice growing out of the turning of sharp curves at speed, change of grade and greater inequality of track conditions on electric roads, leading to strains which do not exist in steam practice.

("Objected to as incompetent, irrelevant and as containing an assumption of fact.)

"A. The conditions are entirely different. In steam practice the curves are all very slight, being of very long radius, and the direction is overcome by changing the center of gravity by raising the outer rail, so that there is practically no lateral strain in turning curves in steam railroad practice. In electric practice the curves are of very short radius, the direction of the car being taken care of by guard rails, the center of gravity remaining the same, as the tracks are on the same plane. This means great friction and a great lateral strain."[1]

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[1] It is true that the defendant's witness, Mr. Freeman, stated that "the steam railway standards of former times" have "again become available and have been, in a measure at least, adopted by the electric railway car truck builders." (Rec., p. 210, XQ. 31.) But this witness is shown by his own admission to have been almost entirely ignorant of the truck art. (Rec., p. 207, XQ. 7 to XQ. 27.) And in his comparison of the former steam car practice with the modern electric practice he entirely overlooks the important fact that in load, speed and almost in car body weight, the latter practice to-day equals the

"Q. 15. In steam practice does the car haul the truck or the truck haul the car, and how is it in electric practice?

"A. In steam practice the car body is first set in motion and the truck is hauled; in electric practice the truck is first in motion, and imparts said motion to the car body, which is attached to the upper part of the truck. This brings out very severe strains on the truck, being increased largely in proportion to the load carried on the car and to the weight of the car body.

"Q. 16. In steam practice at what point of the structure does the movement of the car body, when the locomotive starts, impart motion to the truck structure?

"A. The bolster is attached to the car body and moves with it until it strikes the transom, which is a part of the truck structure, and the motion is imparted downward to the wheels; in electric practice the wheels are first set in motion, and the motion is imparted upward to the car body. This is an exact reversal in the manner of imparting the motion."

Mr. Harrington also testified (Rec., p. 458):

"Q. 11. As a practical truck man, what light did the *steam railroad* truck practice throw upon the electric street railway truck practice?

"A. The Master Car Builders' truck as employed by the steam railroads *was not adapted to the requirements of trolley equipment,* in that the method of con-

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former. The witness could not even state "what different types of pivotal street railway trucks are to-day in use throughout the country." (Rec., p. 211, XQ. 34.)

Again, Mr. Freeman further shows his lack of knowledge of the situation (Rec., 212, top of page) by stating that "in modern steam railroads the weights carried are much greater than in the modern suburban electric railroad practice." The crowded street cars familiar to us all negative this testimony.

He speaks (Rec., p. 210, top of page) of the old steam car truck art as illustrated by the patents to Buck, Davenport & Bridges, Thyng and Romans, whereas, except on paper, there is no evidence here that these patents really constituted a part of that art, and a mere inspection of them will satisfy anyone that they did not. On the other hand, the complainants produce the testimony of two such men as *Mr. Akarman* and *Mr. Harrington*, who have passed their lives in this business and whose positions show that they stand at the head of it. The fact is that the modern growth has been on entirely different lines from those patented devices.

> struction raised the car too high from the street, the wheel base of the truck was too long, the motors were not required in the Master Car Builders' truck, and there was no provision for mounting the motors."

The new requirements were met by the introduction by the J. G. Brill Company of a new type of pivotal truck which came to be generally known in the trade as the "Maximum Traction" truck. It was the first really successful electric *pivotal* truck for urban service. A truck of this type had a pair of large wheels at one end and a pair of small wheels at the other. The pivotal point (the connection between the car body and the truck) was *eccentric,* being placed over or near the axle of the large wheels. The large wheels were the driven wheels on which the motor was sleeved. The pivotal point being eccentrically placed over or near the large wheel end of the truck, the pivotal radiation of the truck in rounding sharp curves was very slight in respect of the large wheels, while the small wheels were so low that they could radiate under the car sills. In this way the car body could be hung low, because, with their *slight radiation,* the large wheels would not strike the sills of the car, but radiate between them. Only one motor could be used on each truck (geared to the large wheel axle).[1]

Trucks of this description were the first trucks successfully used under 8-wheel cars on narrow streets, and for some time were *the only known* type of truck suitable for that purpose. They were devised and put on the market by the J. G. Brill Company. (Rec., p. 421.)[2]

Mr. Harrington testified as to this type (Rec., p. 459, Q. 14):

> "A. The early development of railway rolling stock was along the lines of longer cars, and the invention of the Maximum Traction truck, so called, was the result of this demand, brought about by the two controlling factors; first, you get a truck that would radiate under bodies and that would admit of use of

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[1] Merely as showing the general features of this type, see photograph in Record, p. 154.

[2] The fundamental and controlling patents on them were sustained by a judgment in equity in the Circuit Court for the Eastern District of Pennsylvania, in *Brill* v. *Delaware Co. and Philadelphia Railroad Co.,* 109 Fed. Rep. 901, from which no appeal was taken.

one motor only. The Maximum traction equipments in the early days were confined almost exclusively to relatively slow speed equipment.

"The necessities dictated having the car body as close to the ground as possible, in order to avoid the high step from the ground to the platform of the car, and also to provide that the car would go under bridges and the usual overhead construction usually present in cities and towns."

The "Maximum Traction" truck at first met the requirements of the business, but as the street railway business continued to develop, new conditions arose. Mr. Harrington, the able and experienced manager of the electric railway system of Camden, points out (Rec., p. 459, Q. 15 to 20) the failure of Maximum Traction trucks, in some respects, to meet these new conditions and the consequent demand for a new truck. He shows that the new truck solved the problem.

The truck of the Brill patents in suit was then invented to meet the new requirements of the trade. It was a center-pivotal, short wheel base truck, upon which the car body could be *hung low enough,* and on which four electric motors could be used on each car.

The Truck in Suit is an epoch-making Truck and constitutes the highest present Development of the Art.

The history of the development of electric trucks since their introduction is thus summarized by *Mr. Akarman,* a most experienced and competent street railway man. (Rec., p. 427, answer to Q. 36):

"There were *three distinct epochs* in the development of trucks, *first* being the production of a *truck,* by that I mean an independent piece of mechanism separate from the car body, to which the electric motors could be attached and become part of; the *second* step in the development of trucks was the production of trucks of the 'Maximum traction' type, which type of trucks met the requirements up to a certain length of car body run at a limited rate of speed; THE THIRD EPOCH CONSISTED IN THE DEVELOPMENT OF PIVOTAL TRUCKS OF THE TYPE OF THOSE IN DISPUTE."

And then *Mr. Akarman* defined the place in the art of the Brill truck in suit as follows:

> "Q. 38. State whether or not, in your opinion, you consider the truck of the type here in controversy as constituting from your practical standpoint an advance in the truck art.
>
> "A. I CONSIDER THE PRESENT TYPE OF TRUCK IN CONTROVERSY TO BE THE HIGHEST DEVELOPMENT AT THE PRESENT TIME IN THE ART OF TRUCK MANUFACTURE."

Mr. Harrington fully agreed with him (Rec., p. 460, Q. 19):

> "The adoption of the center pivotal truck as represented in the 27-G Brill and 14-B-3 Peckham *marked a very substantial and necessary development in the use of railway trucks for trolley purposes.*"
>
> "The *next epoch* showed the necessity for higher speeds and a larger capacity in motors made up in multiple equipments rather than fewer motors of larger capacity. This led up to the 27-G and 14-B-3. The *success following* brought us to the practice of to-day." (Rec., p. 468, XQ. 51, at end of answer.)
>
> "In about 1898, and with the adoption of the trucks [of the] 27-G and 14-B-3 type, began a development in street railway practice resulting in *the investment of millions of dollars* which is *attributable to no other reason than* the opportunity offered by the use of trucks of the above-mentioned description." (Rec., p. 463, Q. 37.)

The present *high-speed* business with long cars running at times 50 miles an hour (a business upon which hundreds of millions of dollars have been invested so that soon there will be a continuous line of electric railway from Maine to Omaha) *"could not be done with the use of any truck known to the trade prior* to the introduction of the type of truck here in controversy." (p. 463, Q. 36.)

This truck represents the *"current practice* for strictly city and suburban work." (p. 468, XQ. 54.)

> "The development of only the last three or four years [in urban and interurban extension] and is

brought about by the results obtained from the inventions of the 27-G and 14-B-3 trucks." (p. 467, XQ. 48.)

"The development of heavy traction work *is purely the results* of the practical demonstration of the financial successes in the use of the double-truck cars, whose OPERATION WAS ONLY PERMITTED IMMEDIATELY FOLLOWING THE INVENTION AND RADICAL DEPARTURE IN TRUCK CONSTRUCTION AS EMBODIED IN THE 27-G AND 14-B-3 TRUCKS." (p. 467, XQ. 50.)

Dates of Invention and Patenting.

The earliest trucks which contained the structure of the patents in suit were completed by the J. G. Brill Company on March 28, 1896, and were shipped on that date to the Mill Valley & Mt. Tamalpais Scenic Railway Company in California. Thus:—

Walter S. Adams (Rec., p. 394, Q. 14, 15) produced a photograph of one of these trucks, which is reproduced at p. 136 of the Record and marked "Photograph of Mt. Tamalpais Truck."

The date of shipment is further proved at p. 398, Q. 43, by the production of the J. G. Brill Company sales book, and at p. 184 by a second production of the same sales book, coupled with the testimony of *John T. Dunlap,* who made the entries in them.

The invention of the truck was in December, 1895, and this is shown by the testimony of *Walter S. Adams* (from Record, p. 394, Q. 15, to p. 399, Q. 45).[1]

This witness produced a series of five paper drawings, beginning with the drawing of December 30, 1895, all showing the earliest drawings made at the Brill works for this type of truck. Also five tracings made therefrom and five blue prints made from the tracings. All these drawings, tracings and blue prints were offered in evidence at p. 399. The blue prints, by stipulation, are substituted for the tracings and drawings, unless the latter be called for at final hearing. The blue prints, marked "Complainants' Exhibit,

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[1] It is a noteworthy fact that all three of these successive advances in the truck art, *each marking an epoch*, were the subject of Brill patents and were given to the world by the J. G. Brill Company.

Blue Print," with the date thereof, are reproduced at pp. 137 to 141.

July 3, 1897, the patentee, G. Martin Brill, for many years before and continuously since then until his death in March, 1906, the president of the J. G. Brill Company filed an application in the Patent Office for letters patent on this invention. His application covered the broad features of the invention and also several specific embodiments of it. The Patent Office rules required a division of the application into three parts, and on November 9, 1897, two divisional applications were filed. The original application subsequently led to the issue of the parent Patent No. 627,898, and the two divisional applications resulted in Letters Patent Nos. 627,899 and 627,900. The *second only* of these divisional patents is here in suit.

Requirements of Electric Street Railway Practice.

Before taking up the subject matter of the patents we will consider the requirements of electric street railway practice.

The requirements of modern electric street railways for cars running as fast as 30 miles an hour in narrow city streets with sharp curves are as follows:

1. A long car body, at least 30 feet in length, with two 4-wheel *pivotal* trucks. This provides 4 axles for mounting 4 powerful motors.

2. The car body *must be hung low enough* to require but a single step from the car platform to the ground.

Nothing need be said as to the use of long cars; they are used because they are obviously more profitable to operate.

Low-hung car bodies are required for the convenience and safety of passengers, and for rapidity in getting on and off the car. A high car body would require an additional car step; with an additional car step the width of the structure would have to be greater, or else space for the additional step would have to be taken out of the width of the platform. Neither of these arrangements would be satisfactory, or even possible, in practice. The width of cars cannot be made greater in narrow streets, and narrower

car platforms would furnish less room for passengers and would be unprofitable to operate.

With wheels of the standard height (33 inches), it is obvious that the car body sills must come below the tops of the wheels, and consequently if long wheel base trucks were used, the radiation of the wheels in rounding sharp curves would bring the wheels into contact with the car sills. It is only by the use of short wheel base trucks (when a centre pivotal point is used) that the radiation of the truck wheels between the car sills can be reduced within the necessary limits to enable a pivotal truck to be used under a low-hung car. (See testimony of *Akarman,* p. 419, and *Harrington,* p. 456.)

In *steam cars,* which are, of course, always mounted on pivotal trucks, the height of the car body is not, within limits, important. Steam cars have, in practice, three or four car steps; the car bodies are set above the tops of the car wheels, which have ample room to radiate under the car sills. This and other considerations explain why it is that in building electric street cars nearly as long as steam cars (both being mounted on 4-wheel pivotal trucks) the various types of trucks in use on steam roads in the past, including the present *standard* steam railway truck now in general use, and known as the *"Master Car Builders'"* truck, are not practical in electric street railway practice.

It is pointed out above that at the time of the invention of the truck here in suit only the following types of trucks were in use (with but slight exceptions):

1. *Non-pivotal* trucks under 4-wheel cars.

2. *Pivotal* trucks of the "Maximum Traction" type, two of which were placed under each car body.

It may be said here that in modern high speed electric street railway practice the truck exactions are most severe. Not only is its speed constantly kept up to the average steam railway speed, but its severe work is to be done on much more irregular tracks, with frequent changes of grade and constant and sharp curves, and with frequent startings and stoppings. Add to this that in steam practice on curves the lateral strains are much lessened by raising the outer rail. None of these conditions are present in steam railroad practice and all of them place tremendous strains upon the elec-

tric truck, which, to meet them, must not only possess great strength, *but must obviously be of correct mechanical construction*. Hence it is, undoubtedly, that the art has, since the introduction of pivotal street car trucks, known practically but two successful types, the "Maximum Traction" type and the type here in controversy.

LETTERS PATENT IN SUIT.

1. Parent Patent No. 627,898.

Letters Patent No. 627,898 relate to the general features of construction in the truck; and No. 627,900 (a divisional patent) relates mainly to improvements in certain elements of a truck, the general structure of which is the same as is found in the parent patent, No. 627,898.

Mr. Livermore, the appellants' expert witness, testified as to the parent patent as follows (Rec., p. 81):

"Taking up first the patent No. 627,898, which I will call the first Brill patent, the main objects to be attained by the construction therein shown are to provide an efficient support for the car body in as low a position as is practicable, and to afford an efficient but yielding and elastic connection between the car body and the axle boxes for the journals of the wheels which ultimately support the weight of the car and its load, the connections through the truck structure from the car body to the wheels being such as to prevent the shocks encountered by the wheels from being transmitted to the car body which is thus rendered easy riding and comfortable for the passengers. The structure is such, however, as to afford an efficient draft union or connection from the wheels, to which the propelling force of the motor is applied, to the car body, which is to be propelled along the track. The construction is also such that the flexibility and elasticity in the internal connections in the truck structure also tend to relieve the car body from shocks arising from the application of the motive power to the wheels and of the restraining power of the brakes in starting and stopping the car.

"The truck . . . is made up of three principal components, namely:

"*First,* the truck frame which controls the position of the axle boxes, and is supported upon the axle boxes, through the intervention of springs over each axle box, which I will call the axle box springs.

"The *second* principal component is the bolster, which is a strong rigid transverse beam, pivotally connected at the middle of its length with the car body, which rests directly upon it.

"While the *third* principal component comprises the parts which afford the yielding and elastic connection between the first and second components, namely the truck frame and bolster, such that an adequate connection is afforded between the two to sustain the bolster and car body on the truck frame and wheels while absorbing and preventing the transmission of shock from the latter to the former.

"Referring now to the construction more in detail of each of said principal components, and taking up *first* the truck frame, said frame is in the general form of a rectangular frame surrounding the two pairs of wheels, and having two side frames outside of the wheel gauge, one at each side of the truck. Each side frame consists essentially of a longitudinal beam at some height above the wheel journals, having near each end yokes or axle box pedestals, each in the form of an inverted U, with the axle box embraced between the vertical sides of the pedestal, and capable of moving vertically therein, but having no appreciable movement relative to the axle boxes in horizontal direction. An axle box spring is interposed between the top of each axle box and the crown of the corresponding pedestal to sustain the truck frame upon the axle box while permitting a yielding or spring-cushioned vertical movement of one relative to the other.

"The two side frames at the two sides of the truck are also connected near the middle of their length, and between the peripheries of the wheels of each pair, by transverse beams called transoms, there being sufficient space left between the two transoms to accommodate the bolster.

"The *second* principal component, namely the

bolster, is a transverse rigid beam lying between the transoms of the truck frame and having its middle portion above the level of said transom, and provided with a pivotal support for the car body, while at the ends the bolster extends to a point below the level of the side frame of the truck, and has a suspensory connection therewith by the appliance making up the third principal component of the truck, the length of the bolster in the part comprised between the side frames being a little less than the width of the space between the side frames and the width or thickness of the bolster in the direction lengthwise of the car being a little less than the width of the space between the transoms, so that while the bolster is confined within the space between the transoms and side frames of the truck frame which limit its relative movement in any direction, except the vertical, in which they guide it, the said bolster is, nevertheless, capable of having a slight movement in any horizontal direction relative to the truck frame on the suspensory devices which connect the two.

"The *third* principal component, namely, the yielding and elastic appliances by which the bolster is suspended from and connected with the truck frame, is as follows, and I will, for convenience, describe the connection at one end only of the bolster, as that at the other end is precisely the same.

"The end of the bolster which, as before stated, is below the longitudinal upper part of the side frame, rests upon the middle of a semi-elliptic spring, which lies below and approximately parallel with the side frame of the truck, thus being outside of the wheel gauge and with its ends near the axle box pedestals of the truck frame. Each of the said ends of the semi-elliptic spring is connected with the side frame above it by a link which derives its support from the side frame, and springs are interposed between the point of support of the links on the side frame and the point of support of the semi-elliptic spring on the link so as to afford vertical elasticity in the connection between the semi-elliptic spring and the side frame, the connection being such, furthermore, as to afford a capacity for swinging movement of the link relatively to the side frame in any direction, so as to accommodate movements of the

bolster relative to the truck frame in the direction either lengthwise of the car or transverse thereto, or in any horizontal direction as may result from such longitudinal and transverse movement."

Each end of the bolster is supported on the middle of a semi-elliptic spring arranged lengthwise of the truck and located just below the upper truck chord or frame. The ends of this semi-elliptic spring are supported on the lower ends of links or hangers, which extend upwards therefrom through openings in the upper truck chord or side frame and are supported on the top of that frame. Springs are interposed between the point of support of the links on the truck frame and the point of support of the semi-elliptic springs. Thus, the semi-elliptic springs and the weights sustained by them are spring-supported on the side beams of the truck frame. This spring support includes spiral springs interposed between each end of the links and the side frames of the truck frame. The supporting links are pivotally or yieldingly connected with the side beams of the truck frame, so that they may swing with relation thereto, and there is a provision for a swinging movement of the bolster and semi-elliptic springs both in a direction transverse of the truck and lengthwise of the truck.

Claim 13 may be taken for convenience of argument as a typical claim. It is as follows:

"13. The combination in a car-truck of the side frames, the semi-elliptic springs movably and resiliently suspended from the side frames, and a bolster secured to said springs, substantially as described."

The elements of the claim are:

The side frames,

The semi-elliptic springs movably and resiliently suspended from the side frames,

The bolster secured to the semi-elliptic springs.

Claim 81 is as follows:

"81. The combination in a car-truck, of the side frames, the semi-elliptic springs, a cross bolster resting on the semi-elliptic springs, links, and springs combined with said links, said links deriving their support from the side frames and connecting the ends of the semi-elliptic springs with the side frames, substantially as described."

Claim 81 refers to the same elements as claim 13, but is more specific and definite with regard to the means by which the semi-elliptic springs are "movably and resiliently suspended" from the side frames, said means being definitely mentioned in claim 81 as links, and springs combined with said links.

The construction of the truck of the patent being understood, its mode of operation easily appears.

When the motors start the truck, the lower ends of the links and the semi-elliptic springs remain stationary, relative to the forward movement of the truck, until the transoms, which are a rigid part of the truck frame, have moved forward against the bolster (upon which the car body rests), whereupon the transom and bolster form the means for imparting movement to the car body. This enables the semi-elliptic springs and their supports (the link springs) to continue to act freely as *spring supports for the car body,* performing their several functions without hindrance *from the car movement.* The springs are free to act as spring supports during this operation, without being involved as a part of the *drawing* or car-moving mechanism, nor are they or the supporting links subjected to any of the strains of propelling the car.

When in starting the car the bolster and the transom come together, the upper ends of the links may cease to move longitudinally (relative to the truck frame), but their lower ends still continue to swing free, like a pendulum, and being universally pivoted at their upper ends, their lower ends swing through their own greater amplitude. THIS, WITH THE AID OF THE SPIRAL SPRINGS ON THE LINKS, GIVES THAT FREE SWINGING, UNIVERSALLY JOINTED, CUSHIONED MOTION, WHICH MARKS THE SUCCESS OF THE TRUCK IN SUIT. The jar or shock of sudden starting of the truck is cushioned and softened before it is communicated to the car body. The jar and shock of the sudden stopping of the truck is likewise cushioned and softened. When the car strikes an obstruction, a depression in the track, or a crossing, the jar is softened or cushioned before it reaches the car body. In fact, in whatever direction there is strain or jar or shock, it is relieved and softened by the free swinging movement of the bolster and the semi-elliptic springs with their spring-link support, either transversely, or longitudinally, or diagonally, as the case may be.

The transoms, between which the bolster lies, constitute a vertical guideway for the bolster, which moves freely between them in a vertical direction, but has only a limited movement in the direction lengthwise of the car. At the end of this lengthwise motion the bolster brings up against one or the other transom and thus affords a positive engagement between the truck frame (to which the transoms are rigidly connected) and the bolster (which carries the car body) so that the motive force applied to the truck frame is transmitted to the car body. The transoms do not interfere with the free *transverse* swing of the bolster and car body.

The Brill patent shows a "chair," supported on the semi-elliptic spring, but this detail of construction is not here involved.

The bolster affords three points of engagement with the car body, viz.: At the middle of the bolster, where it is pivotally connected with the car body, and at each end of the bolster under the rub plate placed under each side of the car. The weight of the car body may be sustained at all of these points; or it may be sustained mainly, if not solely, at the middle of the bolster. In the latter case it is known as a center-bearing truck. In center-bearing trucks the bolster is commonly supplied with side-bearing supports, with corresponding rub plates on the under side of the car body, for the purpose of preventing the undue tipping of the car body on the bolster, and not for normally sustaining the weight of the car.

Or the weight of the car may be borne mainly, if not solely, on the side bearings, in which case the pivotal connection in the middle of the bolster serves merely as a *draft* connection between the truck and the car body.

The spring links which support the ends of the half-elliptic springs are made in two parts, an upper and lower part, capable of longitudinal movement with relation to one another and with a spring interposed between them to afford spring resistance to the downward movement of the lower part on or with relation to the upper part. The upper part has a ball and socket connection with the side beams of the truck frame so as to admit of either the transverse or longitudinal swinging of the links with relation to the truck

frame, necessary for affording flexibility of connection between the bolster (which supports the car body) and the truck frame.

2. Divisional Patent No. 627,900.

This patent shows a truck having the same general structural elements and mode of operation as the truck of the first patent. The difference lies only in the construction and arrangement of the link and springs, which afford the movable and resilient connection between the bolster and the semi-elliptic springs on the one hand and the truck frame on the other hand.

In the second patent the links, which are composed of two members, each have a pivotal movement with relation to each other on a horizontal axis lengthwise of the car. The spring is interposed between the link and one of the two parts that are connected by the link, thus giving substantially the same effect of a yielding elastic connection between the two parts, viz.: the side frames and the semi-elliptic springs.

The pivotal joint in the link enables the semi-elliptic springs to swing transversely with a parallel movement without bringing any torsional strain upon the links. That is, while the upper member of the links becomes inclined to the vertical during this transverse swinging movement of the semi-elliptic springs, the lower end of the link may remain vertical, and thus afford a square bearing for the end of the semi-elliptic springs, which end bearing does not tip laterally in its swinging movement, being rigidly connected with the end of the bolster.

A spring is interposed between the lower end of the link and the bearing for the end of the semi-elliptic spring. The semi-elliptic spring is mounted on the lower member of the link below the horizontal pivotal point between the two link supports. The upper member of the link is so connected with the side frame of the truck as to be capable of swinging transversely or longitudinally as may be required; the connection shown is by a ball and socket joint, just as in the first or parent patent in suit.

Mr. Livermore, as to the structure shown in the two patents in suit, testified as follows (Compl. Rec., p. 504):

"Briefly summarized, the features of construction and arrangement that essentially characterize the Brill truck are the truck frame supported upon the wheel journals, having side frames outside of the wheels and above the wheel axles; the transverse bolster between the two pairs of wheels having free vertical movement and lateral and longitudinal play in the truck frame; the semi-elliptic springs, one at each end of the bolster, lying at the outside of the wheels beneath the side frames of the truck frame and the spring links suspending the ends of the semi-elliptics from the side frames and having universal movement to accommodate the swing of the bolster and the spread of the semi-elliptics incident to their spring action.

"The foregoing elements make a unitary structure or structural combination, every feature of construction and arrangement of which is essential for the proper co-action of all the parts to attain the results that the truck is intended to produce.

"By this construction and arrangement the springs of the system, and especially the semi-elliptic springs, combined with the spiral springs of the spring links by which the semi-elliptics are suspended from the side frame, not only contribute to the easy riding of the car body by absorbing the shocks that would otherwise be transmitted from the wheels of the car body, but they serve very efficiently to relieve the truck structure of internal strains that are incident to various of the constructions of the prior art, and by their conjoint action accomplish more than the sum of their individual actions or effects, which might be obtained if the same elements were incorporated in other arrangements in a truck structure."

Also, on page 94:

"According to my understanding, the gist of the invention of the first Brill patent, No. 627,898, lies in the entire organization of the truck, comprising the truck frame, the bolster and the intermediate appliances connecting the truck frame and bolster, and not in any one element thereof.

"Since, however, trucks have commonly been made comprising a truck frame and a bolster, and inter-

mediate connections, I should consider that the truck of the first Brill patent was characterized mainly by the nature of the connections between the bolster and the truck frame, namely, by the semi-elliptic springs and the springs and links suspending them from the side frame, and in the structural character of the truck frame and bolster which adapt them to the structural combination with the said connection.

"As to the second Brill patent, No. 627,900, the invention, as I understand it, involves that forming the subject of the first Brill patent, but is an improvement thereon, the gist of the improvement, briefly stated, consisting in the jointing of the links forming part of the connection between the bolster and the truck frame, and in the structural arrangement of the links relative to the side frame, consisting in supporting the links upon the side frame and having them pass down through the large openings in side frames, which accommodate the universal swinging movement of the links on the side frames."

ADVANTAGES OF THE TRUCK OF THE PATENTS IN SUIT.

The requirements of electric truck practice with pivotal trucks have been referred to above. They may be expressed more fully as follows:

For high speed and for climbing steep grades, four motors are often required.

The utmost possible traction (that is, grip or adhesion of the wheels on the rail).

A short wheel base for turning curves.

Low-hung cars are a necessity.

For the comfort and safety of passengers, cars must be easy riding.

The "pounding" of the trucks on the rails must be reduced to the greatest possible extent.

(The "pounding" of the wheels of a heavily loaded electric car on the rail joints is one of the most serious problems of street railway practice. The wear on the rails is very severe, far exceeding the wear on the rails of steam railroads. It is a source of very heavy expense in operating a road.)

Three experienced electric street railway men were called by the appellants for the purpose of showing the successful operation of trucks of the patent in suit on their respective roads, and that these trucks meet all the most exacting truck requirements.

(It will be remembered that the witnesses, by "*27-G*" trucks, refer to the truck of the *Brill patents in suit,* and by "14-*B*-3" to the *Peckham truck* here complained of, which trucks, as Mr. Akarman says, "are practically identical in construction; I mean from a practical street railway man's standpoint.") (Rec., p. 422.)

Walter E. Harrington is a *trained* street railway man and mechanical engineer. For years he had charge of the Camden, N. J., system, and had experience with trolley roads since 1889. (Rec., p. 456, etc.)

He testified (Rec., p. 459, etc.) as follows:

"A. The early development of railway rolling stock was along the lines of longer cars, and the invention of the Maximum Traction truck, so called, was the result of this demand, brought about by the two controlling factors; first, you get a truck that would radiate under bodies and that would admit of use of one motor only. The Maximum Traction equipments in the early days were confined almost exclusively to relatively slow speed equipment.

"The necessities dictated having the car body as close to the ground as possible, in order to avoid the high step from the ground to the platform of the car, and also to provide that the car would go under bridges and the usual overhead construction usually present in cities and towns.

"Q. 15. State any new requirements of the business which came into the business after the adoption of the Maximum Traction truck.

"A. The Maximum Traction truck was found to be quite destructive to track. The development of trolley roads into suburban districts brought about the requirements of still higher speed, increased power, which was not found in the Maximum Traction truck, being limited to use of two motors per car, and it was found that the truck was not safe to run on the high speeds required, in view of the frequent derailments of the

Maximum Traction truck under these higher speeds, due to the smaller wheels and small tractive qualities.

"Q. 16. What was the net traction of the Maximum Traction type?

"A. The tractive effort on the Maximum Traction truck varied from 65 to 85 per cent. of the total traction.

"Q. 17. What new and beneficial features did you find in the Brill 27-G, which you first began to use in 1899, and the Peckham 14-B-3 in 1900, as compared with the Maximum Traction type and the new requirements of the business?

"(Objected to as irrelevant, leading and as containing an assumption in the use of the word 'new.')

"A. The 27-G Brill and 14-B-3 Peckham trucks filled the requirements in that they permitted the truck to radiate under the car body having a 4-foot 6-inch wheel base, with the motors hung out and away from the axles, and away from the center of the truck; that is, the motors were not mounted between the bolster and the axle.

"Four motors were permitted, thus giving the added power required to propel the cars at the higher speed and longer runs for the suburban business. The trucks also, by reason of being pivoted centrally, resulted in the car riding more smoothly and using all the traction available—using the entire 100 per cent.

"Q. 18. How are the 27-G Brill and the 14-B-3 Peckham trucks as to easy-riding qualities?

"A. There is very little difference in the riding qualities of these two trucks. If anything, the Peckham was the easier-riding truck in that the more crosswise motion was permissible in the Peckham 14-B-3 truck. In comparison with the St. Louis center pivotal double truck the difference in operation is very little.

"Q. 19. Compare the Brill and Peckham trucks mentioned with the Maximum Traction with respect to easy riding.

"(Objected to as being wholly irrelevant.)

"A. The center pivotal trucks in all instances were markedly easier in riding compared to the Maximum Traction truck.

"The adoption of the center pivotal truck as repre-

sented in the 27-G Brill and 14-B-3 Peckham marked a very substantial and necessary development in the use of railway trucks for trolley purposes.

"Q. 20. In considering the comparative ease of riding between the old Maximum Traction and its successor, the truck here in controversy, what part did the difference in spring arrangement between the two types play?

("The use of the word 'types' is objected to as indefinite and misleading.)

"A. The Maximum Traction truck depended for its spring action upon the axle having the small diameter wheels upon a spring set in the pedestal box, the pivotal point being so near and adjacent to the tractive axles that the spring action was very unsatisfactory, resulting in throwing various irregularities in track and the motions resulting therefrom into the car body.

"The center pivotal truck, having the bolsters supported on elliptical springs, the ends of which were hung in series through spiral springs, absorbed the motions caused by the irregularities in track to such an extent as to make a marked difference in the riding of the car.

"Q. 21. Can you state whether or not there is a difference of rhythm and of action in the elliptic and spiral springs in the type of truck in suit?

("Same objection to the use of the word 'type.')

"A. It is a well-known mechanical fact that a spiral spring is more active for a given size and capacity than an elliptic form of construction of spring. Furthermore, the smaller a spiral spring is the greater its responsiveness. In order to illustrate, taking a given sized spiral spring and comparing its activity or responsiveness to two springs (spiral) whose combined capacity is equal to the latter, the two springs will be more active and responsive than the larger spiral spring of equal capacity.

"The combination of the relatively like spiral springs at the end of the elliptic springs results in reducing the jars and variable motions, due to the difference in rhythm between the two springs.

"The Maximum Traction truck has only spiral springs."

Harry H. Adams testified (Rec., p. 433) that he was superintendent of shops of the Baltimore street railway system, operating about 1555 equipments; and that he had had experience with Maximum Traction trucks and with the type of trucks here in controversy, both of the Brill and Peckham make.

He testified (Rec., p. 434, Q. 5, etc.) as follows:

"Q. 5. Have you, within the last 8 or 10 years, observed any changes in the street railway practice and its requirements in relation to speed, motive power, length of cars, etc.?

"A. The tendency has been with most of the roads to increase their speed and also the length of the car body, and the practice in regard to electrical equipments or motive has been to go to the four-motor equipment per car.

"Q. 6. What are your longest car bodies?

"A. I have had experience with car bodies which have been 30 feet 5 inches and 32 feet, respectively, over corner posts. The former in Baltimore and the latter upon the North Jersey Street Railway Company's system.

"Q. 7. What is your highest speed?

"A. At present, we do not get a speed of much more than 20 miles per hour, maximum. We are contemplating, however, the installation of some equipments that will run at least 40 miles per hour.

"Q. 8. What connection has larger car bodies with the adoption of four motors per car? and, in this connection, bear in mind the heavier grades of street railway practice.

"A. With the four-motor equipment, it is possible to take care of a heavy car body and distribute the power unit so as to get the best possible results from traction and acceleration. The four-motor equipment is much to be preferred over equal horse power in two-motor equipment.

"Q. 9. What percentage of traction do you get in this type with four wheels of the same size?

"A. With the four-motor equipment we practically get 100 per cent. traction.

"Q. 10. How about Maximum Traction trucks?

"A. In the Maximum Traction truck we get about 70 per cent. upon the driving wheels.

"Q. 11. Compare the two types with respect to pounding on the rail joints.

"A. There is considerably less pounding upon the track with the four-motor equipment.

"Q. 12. What about the danger of derailment with the respective types?

"A. There is a great deal more trouble with respect to derailments with the Maximum Traction truck than with the other type. The reason for this is the tendency for the small wheels to mount the rail."

"Q. 19. In street railway practice, is the present tendency among the companies towards the last-mentioned type or towards the Maximum Traction type, in ordering new equipments, outside of the cities where the conditions impose the use of the Maximum Traction type?

"(Objected to as incompetent and irrelevant.)

"A. I think the tendency is to get away from the Maximum Traction truck in every case that it is possible to do so.

"Q. 20. What do you consider the practical advantages of the type now here in suit over the Maximum Traction type?

"(Same objection, and as containing an assumption.)

"A. The ease of riding is one of the principal features of this type of trucks due to the fact that it is possible to use a better spring arrangement. Then the possibility of using four motors as against two, allowing for a considerable gain in the acceleration of the car; also the getting away from the tendency of the Maximum Traction to derail.

"Q. 21. What is the importance of a short wheel base in trucks having wheels all of the same size?

"A. With a short wheel base it is possible to radiate the wheels between the side sills of the car without necessarily raising the car to an objectionable height in regard to the step."

"(Same objection.)

INFRINGEMENT—THE FACTS.

The construction of the appellee's trucks is not disputed. It is shown in "Complainants' Exhibit, Photograph of Defendant's Car," offered at p. 59 and reproduced at p. 127. This photograph is stipulated into the case (Rec., p. 58). It is also shown in detail by a blue print marked "Complainants' Exhibit, Drawing of Defendant's Truck," offered at p. 69 and reproduced at p. 128.

It is further shown by a white metal model, offered in evidence by the defendant as "Defendant's Exhibit, Illustrated Model of Defendant's Truck," which model will be present at final hearing.

The defendant justifies (clause 15th of the Answer) under Letters Patent to Charles F. Uebelacker, granted October 31, 1899, No. 635,986. assignor to Peckham Co.

Practically, after copying the Brill truck in 1897, the Peckham Company abandoned its other types and sold only this type.

Mr. W. G. Price, a former employee of both the Peckham Companies, testifies on this subject and produces a series of photographs of Peckham trucks.

He went to the old Peckham Company in September, 1898, and remained with the new company. (P. 478, Q. 4.) At that time "the Peckham Company had not begun to build their 14-B-3 trucks" (Q. 7). It had built some No 15 and No. 16, or "Jersey Special" trucks. (Shown at pp. 154 [upper cut] and 155 [upper cut], respectively.)

Mr. Price proceeded to design the 14-B-3 truck (p. 480, Q. 14), but it did not differ (for the purpose of this case) from Peckham's earlier No. 15 and its No. 16 in "Jersey Special." The first sales of the 14-B-3 Peckham truck were "some time in 1899" (after the Peckham Company had fought for a patent and lost the fight and Brill had secured the patent). (See p. 480, Q. 17.)

Before that time the Peckham Company had been selling different types of trucks designed for this high-speed service. After it designed the 14-B-3 truck, the sale of those other types entirely ceased, and they sold only 14-B-3 (and Maximum Traction trucks) (p. 481, Q. 24, 25).

Mr. Price testifies that subsequently Mr. Peckham directed him to design a new truck to "compete with Brill 27-G," as "the Court may decide that the 14-B-3 truck is an infringement of the Brill 27-G truck." (P. 481, Q. 20.) He thereupon designed the Peckham 14-B-6 truck, which was a different type of truck; "it did not have half-elliptic springs longitudinally arranged and suspended from the side frames." (P. 481, Q. 26.) It is shown on the upper cut of the photograph at p. 163. The 14-B-6 truck appears not to have sold (p. 481, Q. 25). THE INFRINGING TRUCK CHIEFLY CONSTITUTED THE PECKHAM COMPANY'S ENTIRE PIVOTAL TRUCK BUSINESS.

There is other evidence in this record of direct and deliberate piracy of the truck in suit by the Peckham Company. In the North Jersey case there was some evidence that Mr. Uebelacker, who designed the Uebelacker truck under which the defendant here justifies (and there also justified), had seen "at least a drawing of the Brill truck before he designed his truck." But in this case the evidence is fuller. Mr. Uebelacker himself has testified herein as follows (Rec., p. 14):

He is a trained electrical engineer. Just prior to March, 1897, he was in the employ of the North Jersey Railway Company (then the Consolidated Traction Company) as master mechanic, and saw "a photograph of the [Brill] truck," which he describes and of which he produces a photograph (Rec. p. 164). He entered in March, 1897, the employ of the predecessor Peckham Company as superintendent of truck designing and manufacture.

In the spring or early summer of 1897, Mr. Peckham, president of the *real defendant* here, sent him to Newark, N. J., *to examine the new type of Brill trucks and make measurements of them,* and directed him to get up a design *"for a truck similar to the one he had inspected."*

He identifies a drawing in evidence (p. 165) as representing the *Brill trucks he examined at Newark.*

He was then instructed by the Peckham Company to build an order of trucks for the Consolidated Traction Company in accordance with the design which he had made after he had inspected and measured the Brill trucks. They were built and shipped in the fall of 1897. He began to

design these trucks in May or June, 1897. In June, 1897, he applied for his patent on the *broad features* of the new Brill truck, and assigned his application to his employer, the Peckham Company. (At Rec., p. 171, the assignment is offered in evidence and marked "Uebelacker Patent Assignment.")

The Appellee's Structures Infringe.

It will be remembered that the two patents in suit consist of a *parent* patent, covering the general features of this type of truck, and a *divisional* patent, which relates mainly to the specific construction of the links which support the ends of the semi-elliptic springs from the side frames. They are to be read together—the *general features* from the parent patent, and the *specific embodiment of the links* from the divisional patent, precisely as if the two patents were one. (See *U. S. ex rel. Steinmetz* v. *Allen*, 192 U. S. 543.)

We may give a homely but correct illustration: The parent patent, covering the *broad features* of the truck and also a *specific embodiment* of the spring links, may be viewed as a jointed *fishing rod*. The broad features are the two lower joints; the specific embodiment is the tip. In considering the divisional patent we view it in connection with the parent patent—it is as if we removed the tip of the parent patent and substituted the tip (the specific embodiment of the links) of the divisional patent—thus making the rod again complete (from both patents).

We urge that the parent patent is infringed by the appellee's structure because the latter contains the three principal components of the parent patent, viz.: the truck frame, the bolster and the yielding and elastic connection between the truck frame and the bolster, such that an adequate connection is afforded between the two, while shocks which would otherwise be transmitted from the wheels to the car body are absorbed, so that the car body is made easy riding and comfortable for the occupants. These are the features of claims 13 and 81.

The identity between the truck of the parent patent and appellee's truck in respect of the first two components (the truck frame and the bolster) is too obvious to require

further consideration. As to the third principal component, Mr. Livermore testifies as follows (Rec., p. 85):

> "The third principal component of defendant's truck, namley, the yielding and elastic appliances for connecting the bolster and truck frame, the same as in the truck of the first Brill patent, are composed of semi-elliptic springs which lie below the longitudinal beams of the side frames outside of the wheel base, and approximately parallel with the said beam, the bolster resting at each end upon the middle of the semi-elliptic spring at the corresponding side of the truck, while the ends of each semi-elliptic spring are near the axle box pedestals and are connected with the side frame by links, one at each end of the semi-elliptic spring, which links derive their support from the side frames and have springs interposed between their point of support upon the side frame and the point of support of the semi-elliptic spring on the link, so as to afford vertical elasticity in the connection between each end of the semi-elliptic spring and the side frame. In defendant's truck, furthermore, the same as in the truck of the first Brill patent, the connection of the links to the side frames is such as to afford capacity for universal swinging movement of the links, so as to accommodate the movements of the bolster relative to truck frame, in either the longitudinal or transverse direction, or in any resultant of movements in these two directions, and so as to accommodate the spreading of the semi-elliptic spring as it is flexed in performing its spring action.
>
> "As appears from the foregoing analysis, defendant's truck clearly comprises the same essential components as those of the truck of the first Brill patent, combined and organized and operating in essentially the same way and producing the same result."
>
> "Obviously defendant's truck contains the subject matter recited in both of the above-quoted claims [13 and 81], namely, the side frames, the semi-elliptic springs, a cross bolster secured to the said springs, said semi-elliptic springs being 'movably and resiliently suspended from the side frame,' as recited in claim 13, and the specific devices by which they are thus movably

and resiliently suspended being links and springs combined with said links as specifically referred to in claim 81, and the general organization and operative relations of all the said elements in defendant's truck being essentially the same as in the truck shown and described in the first Brill patent.

"Specifically the links and springs employed as the movable and resilient suspension for the semi-elliptic springs from the side frames in defendant's truck differ in the structural location of the springs from the constructions shown in the two Brill patents, although this difference in structural arrangement does not affect the function or operative relation of the same to the remaining elements, which is the same in defendant's truck as in the truck shown in the two Brill patents.

"In defendant's truck the spring forming part of the suspension for the semi-elliptic spring from the side frame is interposed between the upper end of the link and the upper part of the side frame instead of, as in the first Brill patent, between two parts of the link vertically movable one relative to the other, or, as in the second Brill patent, between the lower end of the link and the end of the semi-elliptic spring, which rests upon the interposed spring. In all of these arrangements, however, the primary and essential function of the spring is to afford vertical elasticity in the connection between the end of the semi-elliptic spring and the side frame of the truck frame from which it is suspended by said connection, and I therefore regard the difference in location of the spring as entirely immaterial so far as the subject matter referred to in claims 13 and 81 of the Brill patent is concerned.

"In defendant's truck, the link, like that forming the subject of the second Brill patent, is made in two parts pivotally connected together by a joint having a longitudinal horizontal axis, so that the transverse swinging movement of the bolster and semi-elliptic springs may take place without bringing torsional strain upon the semi-elliptic springs, which may remain substantially horizontal during the swinging movement, which would cause the upper parts of the links to assume an inclined position.

"Defendant's trucks, therefore, embody the distinctive feature forming the subject of the second Brill patent containing the subject matter referred to in claims 13, 14, 15 and 17 of second Brill patent."

Mr. Livermore proceeds (p. 88) to consider the defendant's truck in connection with each of the claims of the second patent in controversy, 13, 14, 15 and 17, to which the attention of the Court is asked.

The subject of infringement will be further treated below (p. 59, etc.) in connection with the Uebelacker patent under which the appellee's trucks were built and under which the appellee justifies.

THE APPELLEE'S EVIDENCE.

Some remarks on appellee's expert witness (Freeman) and its only other witness (Sanders) and on objections taken to their evidence.

Mr. Joseph H. Freeman.

The appellee's chief and practically its only witness on the merits, Joseph H. Freeman, was hardly qualified by his knowledge of trucks.

He had been in the examining division of the Patent Office from 1891 to 1899, but he was in charge only of applications relating to "Hydraulics and Printing." He attempted to make it appear that he had had some experience during this time in the car truck art, but it came down to the fact that on "perhaps a half dozen" occasions he had spent "perhaps an hour, perhaps half a day," in looking over car truck patents, of which there were "at least 2000," to see if he could find "some specific device or element which might be useful" to him in his hydraulic and printing work.

Beyond this he had "conversations with those having knowledge of the practical art" of car trucks.

He vaguely stated he had "handled" applications relating to compressed air motor trucks which were abandoned.

As a young man he had visited a railroad shop in Michigan, and later, one in Indiana.

He had recently spent four hours "at the railway exhibit in Washington" covering chiefly steam road railroad trucks and not including the type of trucks here in controversy. It does not appear that he *had ever seen* any such trucks or any Maximum Traction trucks.

This was all he knew of trucks, except that he had spent about forty hours preparing to testify in this cause.

Again, his testimony is almost throughout objectionable and inadmissible. Instead of testifying to resemblances and differences in mechanical structures, he testified as to anticipations and what can be "read upon" the patents in suit, thereby attempting to perform functions which the Court only can perform.

The Court is asked to read his cross-examination, page 209, from XQ. 28 to XQ. 33, where, in comparing the requirements of steam trucks with those of electric street railway trucks, he says that the requirements are the same, except as to the motors, and relate merely to matters of degree, which is entirely incorrect. Also he is in error in regard to the relative weights carried on the two kinds of trucks. A large electric car with its load weighs substantially as much as a loaded steam car and the speeds are the same. Curves are infinitely more frequent and sharper than in steam practice.

A large part of his evidence, particularly that found on pp. 213 to 219, was inadmissible. The validity of the objections require no comment.

Evidence of Mr. Louis M. Sanders.

This evidence was so extraordinary, so outside of the ordinary rules of evidence, that it is difficult to characterize it properly.

Sanders had been an assistant examiner in the Patent Office in the division of "Railway Rolling Stock" from 1894. The application here in suit was filed July 3, 1897. He had had charge of it. This is a summary of his evidence (p. 223):

Q. 5. He testified that his practice was to search in related classes, and sometimes in more remote classes, for anticipations.

Q. 6. That his division was a heavy division, and that often copies of earlier patents in the same sub-class were

in use by other officials or were mislaid; that his searches were as complete as he could make them, "yet they were frequently less complete than I would desire, because of my limitations as to time."

Q. 8. He testified that he examined an average of about *four applications a day.*

The object of this evidence, which is irrelevant and inadmissible, but of no importance either way, seemed to be to lead up to an argument that in passing upon the applications for the patents in suit he had overlooked the Buck, Beach and Davenport & Bridges patents, as to which he was asked at Q. 9. But, *on the contrary*, he testified that the Thyng and Haskins patents alone had been cited by him against the Brill application, and that those other three patents "were never considered in connection with" this application, and that they certainly were not cited, "probably for the reason that the Thyng and Haskins patents were sufficient for his purposes."

This evidence is entirely irrelevant and inadmissible, and of no importance.

In effect, however, it is an admission, in view of the probabilities of the case and upon the assumption that he performed his duty, that he did consider those three patents and that he rejected them as not relevant.

Q. 10. In this question he is asked to explain the file wrapper and to give "any other data which you have." In answer to the latter part of the question, he very improperly proceeded to state what passed between himself and the examiner in charge of the division, Mr. Simpson, and Mr. Levy, then attorney for the applicant. This is an attempt to derogate from a grant of the United States by showing what a United States official stated *casually* when he adjudicated upon the execution of the grant.

Counsel for the appellants called Mr. Levy in rebuttal to testify that such an interview never took place. (Rec., p. 43.)

Q. 11. This question is just as improper as Q. 10

Q. 12. This question is entirely irrelevant and inadmissible. It makes no difference to this Court what Patent Office officials consider "related arts"; it is a *question of law* as to whether any earlier patent cited by way of anticipation is a part of the prior art relative to the patent under consideration.

At Q. 13 an effort was made to induce the witness to say that he had never seen the Buck, Beach, and Davenport & Bridges patents. But he makes the same answer, which, in effect, is an admission that he *had* seen them, but considered that he had enough without them. An expression of his opinion that he probably then considered that the Thyng and Haskins patents "were thought to be complete anticipations" is certainly not evidence.

Q. 14. The answer to this question is merely to the effect that assistant examiners sometimes "overlook a reference which might be considered pertinent."

The inference to be drawn from this evidence, if any of it were admissible, is that an assistant examiner in a "heavy division" is a very much overworked official (and, he might have added, probably underpaid for work of such magnitude and difficulty); that he is sometimes driven too hard to work with entire thoroughness, but that in this case he probably did not overlook the three patents in question, but thought he had enough without them.

This evidence is clearly irrelevant to this issue. It should be eliminated from the cause.

Mr. Edwards (Rec., p. 36, Q. 12), himself a graduate of the Patent Office, testified that these three patents (Buck, Davenport & Bridges and Beach), are all to be found in subclass 243 (Trucks, 4-wheel, Bogies") and *in the same subclass with the Thyng patent* and in the same class with the patents in suit. The necessary inference is that these three patents, as well as Overbagh, were considered by the Patent Office on the Brill applications, and rejected as irrelevant.

Before taking up the testimony of appellee's two witnesses, we will present

SOME REMARKS ON PATENTABLE INVENTION.

Exactly what constitutes patentable invention has always been found difficult of definition, and courts have seldom attempted the task of defining it. But, in view of the great advance in the art made by the patents in suit, we submit that they do show patentable invention, and are entitled to receive the protection of the patent laws.

This record shows that there have been but three successful types of trucks in the entire history of the business:

1. The non-pivotal truck.

2. The Maximum Traction pivotal truck.

3. The pivotal truck of the patents in suit.

Mr. Akarman testifies (p. 427, Q. 36, 38) that the truck in suit constitutes "the third epoch in this development"; that it is "the highest development at the present time in the art of truck manufacture." (See other like evidence, *supra,* pp. 9, 23.)

Further, the evidence shows that the Peckham Company in 1897 sent their engineer to inspect these Brill trucks and copy them, at once began to infringe, and has continued its infringement ever since, giving up the sale of all other trucks (of this class). (See *supra,* p. 28.)

To meet this, what has the appellee proved? The entire evidence for the defense can be summed up in these words from the evidence of their expert, Mr. Freeman, Rec., p. 195):

> "The Thyng, Romans, Adams or Baker constructions, with the movably supported and resilient link connections shown in either of the patents to Spencer & Stidolph, Haskins, Peckham, Overbagh and Beach, used in place of the non-resilient connections between the semi-elliptic equalizer springs and the side frames of the truck, would constitute complete and unequivocal embodiments and anticipations of the subject matter of each of the claims 13 and 81 of the first Brill patent."

Also Rec., p. 216:

> "The subject matter of the Court's statement of the gist of the Brill invention would also be embodied in, and substantially the same embodiment of that subject matter which is specifically illustrated and described in the patents in suit, would be produced, by substituting for the forms of flexible hangers for the semi-elliptic springs disclosed in the Thyng and Romans patents, such flexible and elastic hangers as those found. for example, in the Spencer & Stidolph, Haskins, Longstreth, Heffernan, Graham, the several Peckham patents, Cooke and the Brill and Curwen patents, to say

> nothing of the flexible and elastic hangers disclosed in the Buck and Davenport & Bridges patents, wherein the flexible and elastic hangers are employed for suspending the bolster carrying semi-elliptic springs from the car truck frame."

A like defense set up against the Brill non-pivotal truck patent, referred to above, was thus disposed of by Shipman, C. J., in *Brill* v. *Third Ave. R. Co.*, 103 Fed. Rep. 289:

> "The testimony of the defendant's expert himself, as he goes through the history of the art, and thereby points out what the patentee's combination *did*, as compared with previous *efforts* to do something, show that the patented improvement *was patentable*."

Thus a dozen earlier patents are produced by the appellee, no one of which shows the *combination* of the patents in suit, and a witness is called who knows little or nothing about the truck art, its history and its difficulties, and he testifies that from parts of various old patents the truck in suit may be *built up* by "an ordinary skilled mechanic."

The same argument was advanced in *Carnegie Steel Company* v. *Cambria Iron Company*, 185 U. S. 403, where some useless and abandoned processes and the "skilled mechanic" argument were brought forward by the defendant, but the Court said that it was "*too late*"; that where thousands of the most skillful mechanical minds had failed for years to see the new invention in the old devices, it was absurd to say that any "ordinary skilled mechanic" could have seen it.

It will be observed that there is a very close analogy between this Carnegie case and the case at bar. Both cases relate to industries of great magnitude, employing many highly trained minds. In both industries the need was well understood and most pressing. In both many men were working on the problem with a full sense of its importance. In both there was a prior art showing nothing but failure, and, at last, came the final success. In both there was also the competitor who had failed to make the invention, and who knew only enough to appropriate it when made and to seek the destruction of the patent on it in the courts.

If it required only the skill of an ordinary mechanic to

take these elements from these various old patents and create the *"epoch-making"* truck of the patents in suit, why is it that Mr. Peckham, shown by this record to be a truck inventor and patentee, did not design this truck, though as soon as he saw it he proceeded to adopt it, to the exclusion, practically, of all other types, in October, 1897? (It appears by "Complainants' Exhibit, *S. R. J.*, October, 1897," Record, p. 158, that this was the only type of truck he then advertised for sale in the leading trade journal. See also *supra,* p. 28.)

And why did not so capable an inventor as Walter S. Adams turn his face in the *right* direction when he invented the truck of his patent No. 538,858? Or why did Mr. Curwen, or Mr. W. G. S. Baker, the Baltimore truck builder, both of whose truck patents appear in this Record, fail to grasp the opportunity, or, above all the complainant, Mr. John A. Brill, whose contributions to the truck art have equaled those of the patentee, Mr. G. M. Brill?

These are not the "ordinary skilled mechanics" whose work is considered not to rise to the dignity of inventive effort; these are among the inventors and pioneers in the art through whose inventive genius, with others, the electric street railway art in America leads the whole world. And yet they all failed. Is it not futile, then, to say that any "ordinary skilled mechanic" could have gone to Thyng and Haskins, or Graham, or Heffernan, or Peckham, and by combining their various parts, constructed the Brill truck here in suit?

THE PRIOR ART PATENTS RELIED UPON BY APPELLEE'S EXPERT, MR. FREEMAN.

In considering this branch of the case we ask the Court to bear in mind the proven and *undisputed* facts with regard to the importance in the art of the truck in suit. (See *supra,* pp. 9, 22.)

Mr. Freeman's admission as to what claims 13 and 81 of the parent patent cover is as follows (p. 180):

> "These claims were evidently intended to and do cover broadly the provision in a swing bolster truck of semi-elliptic spring connections between the bolster and the side frames of the truck and some kind of a resilient

> or elastic connection between the semi-elliptic springs and the said frames, which elastic connections, according to claim 13, provides for movement of the semi-elliptic springs in relation to the truck frame and, according to claim 81, are in the form of 'links, and springs combined with said links.' "

He next takes up some 20 patents which he treats with a very light touch, beginning at page 181. He merely describes the structure which he finds in any given patent.

In considering his evidence we ask the Court to bear in mind the principle laid down in *Topliff* v. *Topliff*, 145 U. S. 156 (which was a *carriage spring* case), as follows:

> "It is not sufficient, in order to constitute an anticipation of a patented invention, that the device relied upon *might, by modification,* be made to accomplish the function performed by that invention, if it were not *designed* by its maker, nor *adapted,* nor *actually used* for the performance of such function."

Mr. Freeman is of opinion that no less than seven patents "completely anticipate" the patents in suit. Thus:

Buck Patent. He says of it (p. 186) that "without any change in the construction or any modification of the devices shown and described in the Buck patent, the disclosure of this patent, in my opinion, constitutes a complete and unequivocal anticipation of the subject matter of claims 13 and 81 of the first Brill patent in suit."

Brill and Curwen. As to this he says (p. 187). "The disclosure of the Brill and Curwen patent considered by itself constitutes a complete embodiment of the subject matter of the claims in question."

Davenport & Bridges. As to this he says (p. 189): "This disclosure clearly constitutes a full and complete embodiment and anticipation of the subject matter of the claims in question."

Haskins Patent. As to this he says (p. 191): "Haskins's construction constitutes substantial embodiment and anticipation of the subject matter of the claims in question."

Thyng. As to this he says (p. 192): "The Thyng patent shows every feature of the claims in question with

the slight exception of extensible elliptic connection between the ends of the semi-elliptic equalizing springs and the side frames of the truck frame."

As to *Romans* (p. 192) and *Adams* (p. 192) he makes the same statement as he made with respect to *Thyng*.

He concludes his opinion as follows (p. 195):

> "The Thyng, Romans, Adams or Baker constructions, with the movably supported and resilient link connections shown in either of the patents to Spencer & Stidolph, Haskins, Peckham, Overbagh and Beach, used in place of the non-resilient connections between the semi-elliptic equalizer springs and the side frames of the truck, would constitute complete and unequivocal embodiments and anticipations of the subject matter of each of the claims 13 and 81 of the first Brill patent."

The Court will probably not be greatly enlightened nor aided by this testimony.

As to the second patent in suit, he runs through about the same earlier patents and then states as follows (p. 198):

> "The subject matter of claim 13 would likewise be embodied in and anticipated by the Thyng, Romans, Adams and Baker constructions if such elastic and articulate connections as are found in the Cooke, Haskins, Buck, Davenport & Bridges, Overbagh and Beach patents were employed in place of the articulated but non-elastic connections by which the semi-elliptic load carrying equalizer bars of each of the Thyng, Romans, Adams and Baker constructions are suspended from the truck frames. As I have before pointed out, such substitution is clearly within the province of the ordinary mechanic skilled in the art of truck construction."

The sufficient answer to such testimony is that it is opposed to the following well-established principle stated by Mr. Justice Blatchford in *Lyman* v. *Arnold,* Fed. Cas. 8632:

> "In fact, the more numerous and diversified the forms and arrangements which existed prior to Lyman's, the more certain is it that none of them reached the principle of Lyman's, because his principle, once practically developed by him, *superseded the prior art structures.*"

Also the language of Mr. Justice Shipman in *Brill* v. *Third Ave. R. R. Co.* 103 Fed. Rep. 289:

> "The testimony of the defendant's expert himself as he goes through the history of the art, and thereby points out what the patentee's combination did, as compared with previous efforts to do something, *show that the patented improvement was patentable.*"

CERTAIN PATENTS PRODUCED BY APPELLEE ARE SUBSEQUENT IN DATE TO THE DATE OF INVENTION OF THE PATENTS IN SUIT, AND SOME TO THE ACTUAL COMMERCIAL USE OF THE BRILL TRUCKS.

On December 30, 1895, a complete drawing embodying the invention of the patents in suit was made at the Brill works. This is a brown paper drawing which is in evidence (p. 399). A tracing of it is also in evidence made and dated January 14, 1896. A blue print of this tracing was substituted and is in Record at p. 141. (See *W. S. Adams*, p. 394, etc.)

On March 28, 1896, completed trucks constructed under the patents in suit were shipped from the Brill works to California. Therefore the following patents relied upon by the defendant are of too recent a date:

Baker, January 2, 1896.
Peckham, July 7, 1896.
Cooke, December 7, 1897.
Brill & Curwen (610,118 and 610,119), August 30, 1898.

Also the defendant's "Model Thyng 1845 Patent" (in so far as it shows the link of the Peckham 1896 patent) is irrelevant.

Only dates of issue are relevant under the statutory defense. Thus in *Howes* v. *MacNeal*, 4 Fed. Rep. 141, Blatchford, J., held that "nothing from the Patent Office can be admitted of earlier dates than the patents."

CERTAIN OTHER PATENTS AND DOCUMENTARY EVIDENCE DO NOT REQUIRE SERIOUS CONSIDERATION.

1. **Patents not referred to in this Record by the appellee's expert witness.**

Taylor three Patents.
Block, 1899 Patent.
Boughton, 1892 Patent.

2. **Patents not deemed by this same appellee to be worth setting up in the Circuit Court for the S. D. of N. Y., before Judge Lacombe.**[1] **(129 Fed. Rep. 139.)**

The record in that case will be produced at the hearing, by which it appears that the following patents were not set up there by the defendant:

Romans, 1862 Patent.
Longstreth, 1881 Patent.
Heffernan, 1889 Patent.
Block, 1889 Patent.
Peckham, 1890 Patent.
Peckham, 1891 Patent.
Graham, 1893 Patent.
Adams, 1895 Patent.
Peckham, 1896 Patent.
Baker, 1896 Patent.
Spencer & Stidolph, British Patent.
Taylor, 1891 Patent.
Taylor, 1893 Patent, No. 2.

3. **Patents considered and rejected by Judge Lacombe in that case.**

Davenport & Bridges.
Beach.

These patents, now much relied upon by the appellee, were urged upon Judge Lacombe in the case in the Circuit Court for the Southern District of New York. They had not

[1] In *Mast, Foss & Co.* v. *Stover Manufacturing Co.*, 177 U. S. 489, it was said: "The fact that such anticipating devices *were not called to the attention of the prior court* is likely to open them to suspicion."

been before Judge Bradford. He held in regard to them as follows (129 Fed. Rep. 139):

> "There is nothing now here except prior patents to Beach, and to Davenport & Bridges, and the file wrapper and contents. Neither of these patents shows the precise combination which would anticipate, and the old elements they show were already shown in the patents which were before the court in the other cause (in the Circuit Court for the District of New Jersey). It is not thought that any different result would have been reached (in that cause) had these and the file wrapper been originally put in proof." [1]

4. Patents set up by this same defendant and rejected by Judge Bradford in the North Jersey case.

Buck 1891 Patent.
Overbagh 1870 Patent.

The opinion of Judge Bradford in the Circuit Court for the District of New Jersey on the petition for a rehearing in the North Jersey case shows that these two patents were considered by him. He held as follows (124 Fed. Rep. 526):

> "It is extremely doubtful whether the Buck and Overbagh patents are of such nature as to invalidate or otherwise affect the patents in suit, or either of them, with respect to the claims which have been sustained and held infringed. An examination of the patents sought to be introduced, in connection with the expert and other affidavits and the record of the case, leads me to believe that those patents are immaterial so far as the result embodied in the interlocutory decree is concerned."

5. File wrapper of parent patent in suit, 627,898.

This evidence was not deemed by appellee's counsel to be of importance enough to be produced in the case in the Circuit Court for the District of New Jersey. It first made

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[1] Mr. Edwards (Rec., p. 37, Q. 15) testified that the Beach and Davenport & Bridges patents were first produced in the case before Judge Lacombe.

its appearance in the case before Judge Lacombe. Judge Lacombe considered it and held, on the motion for a preliminary injunction based upon the prior adjudication by Judge Bradford, as follows (129 Fed. Rep. 139):

> "It is not thought that any different result would have been reached had * * * the *file wrapper* been originally put in proof."

6. The four Brill circulars in evidence.

Brill Circular No. 27-D truck.
Brill First Circular No. 27 truck.
Brill Second Circular No. 27 truck.
Brill Catalogue by John A. Brill.

These circulars are all inadmissible. There is *no proof of the dates* of these circulars and no proof of *publication.* While no objection was made to their offer in evidence, there can be no presumption that they were published prior to any particular date.

7. "Defendant's Exhibit, Letters from File Wrapper of Brill's Secondary Patent."

These copies of *part* of a record were objected to and are inadmissible. If any part of that record is to be relied upon, it is our right to have the entire record. If a part of the record is used by appellee to show an abandonment of rejected claims, it will appear in other parts of the same record that the rejection was afterwards withdrawn and the claims were allowed.

We will now take up the remaining truck structures referred to by Mr. Freeman.

1. The Thyng Patent.—The Thyng Truck is not an Operative Structure.

This patent is more than fifty years old. It relates to steam railroad practice and was intended for a light load for a small freight car. There is no evidence that such a truck was ever used.

To demonstrate its inoperativeness in this art, appellants'

counsel employed *Louis T. Pyott,* a first-class mechanic and truck inventor and familiar with patents, and directed him to construct, by himself under the Thyng specification and drawings, a pair of full size Thyng trucks and to experiment with them in such a way as to enable him to form an intelligent opinion as to whether or not that truck was a practical truck *in this art.* He built a pair of Thyng trucks and put them under a 28-foot car body and loaded the car body with eighty men, constituting only an average load for such a car and much less than the load that such a car is intended to carry at times. It was rather a short car body. Thirty-six feet is nearer the present standard.

Mr. Pyott's testimony will be found in Record, pp. 407 to 419 and 440 to 456, to which the attention of the court is asked.

These experiments were fairly and independently made by a disinterested and expert mechanic. This had not been questioned. The trucks were put at the disposal of appellee's counsel for such investigation as they might desire during the taking of their testimony. (See Record, p. 419.)

Motors were not placed on these trucks, as they would have had to be reorganized for that purpose, the Thyng patent (1845) disclosed a *steam railway truck;* therefore, the trucks were not actually operated as electric railway trucks. As to this *Mr. Pyott* testified (Record, p. 412, Q. 36) that he did "not consider that it would have been safe to run this car with the eighty men on it." His testimony shows the entire unfitness of this truck for modern electric truck practice.

Walter S. Adams (a life long truck man and truck inventor) testified to the entire inoperativeness of these Thyng trucks (p. 472, Q. 3 to p. 476).

He points out the *mechanical insufficiency* of the structure, and at Q. 10 testifies that the "result of operating this pair of Thyng trucks under the car body in actual service under prevailing conditions" would be that "the *shackles would break* if this truck was put in actual operation."

The attention of the court is called to a drawing produced by him and marked "Adams Illustrative Drawing," introduced at p. 476, and found at p. 150.

This shows, to a demonstration, the uselessness of the Thyng structure in this art. While considering this Thyng structure, the court is asked to bear constantly in mind the

tremendous loads and strains to which the modern electric truck is subjected—exceeding, as we have pointed out, even those of steam trucks. To meet them, it is obvious that an electric street railway truck structure must not only be strong, but must be of a construction that is *mechanically correct.*

Much was made in the North Jersey case of the theory that "looseness of parts" of the links of the Thyng patent would provide that longitudinal motion of the links which, admittedly, is necessary in the operation of the trucks here in controversy and which *is characteristic* of both complainants' and defendant's trucks. But the theory was never tenable, for obvious reasons, and the defendant's expert witness in this case has not ventured to adopt and testify as to such theory. In view of the absence of such testimony, it may have been unnecessary for us to offer proof that such looseness of parts does not exist and that, even if it does, it does not make the Thyng truck operative, but such evidence was adduced by us, in order that the court might be enlightened on that subject and argument.

Furthermore, the Thyng patent itself shows capacity only for *lateral* or *transverse* motion. Thus it states:

> "The bolster is allowed to move endwise freely between the two girts (transoms) in the truck frame; this motion, which gives the car body its lateral motion, is governed by the shackles.
>
> "What I claim * * * is the mode herein described of hanging the car body and governing its lateral motion."

Now, there being no provision in the Thyng truck for *longitudinal* movements of the links supporting the half-elliptic spring, an abnormal strain is put upon the links, which they are not able to sustain. This is obvious to the eye. It is demonstrated in the "Pyott Photograph No. 2" of the Thyng trucks taken after a car body with only a partial load had been placed upon them at the Brill works. Mr. Pyott testified that, with only eighty passengers on the car, the distortion of the Thyng links was so great that it was not deemed safe to run it. (Rec., p. 412, Q. 36.)

There is another important consideration. It rises out of the difference between steam railway and electric railway

practice. In the former the car is drawn by a locomotive; the car truck is but a roller upon which the car body moves when drawn by the locomotive.

On the other hand, in electric railway practice, the truck is moved by motors and carries or draws the car body with it. There is a moment when the wheels begin to move forward, while the inert mass of the loaded car body remains behind; it is the moment before the transom has come into contact with the bolster. If the Thyng truck were to be used with an electric motor, as soon as the truck began to move, the motion would be transferred from the side beams to the ends of the links which sustain the half-elliptic springs. From the ends of the links the forward motion would then be transmitted to the ends of the half-elliptic springs supporting the bolster, and through the half-elliptic springs to the still stationary weight of the car body, which has not yet begun to move. There is, therefore, in the *Thyng truck* a moment in which the entire *drawing strain* of the car and load comes upon the connection between the links and the half-elliptic springs. This is a longitudinal, backward *strain* upon the links, which ceases only when the forward motion transmitted through the half-elliptic spring to the bolster shall have been sufficient to bring the transom against the bolster, thereby imparting a forward motion to the car body.

On the contrary, in the complainants' and defendant's trucks, when the truck begins to move, the jar to the car body is cushioned by the (*longitudinally*) swinging spring links, and no drawing strains come on the connections between these links and the half-elliptic springs during the moment which elapses while the transom is moving forward into contact with the bolster. (See Rec., p. 56.) That is the latter trucks are constructed upon correct *mechanical principles*.

Thyng Truck as Viewed by Other Practical Railway Men.

John N. Akarman (p. 426):

"Q. 32. Based upon your life-long experience in the trolley business, state whether or not you consider the construction of this *Thyng* model such as would meet the modern practice that you have described.

"A. I consider the device, as shown in the model, as crude and impracticable, and not adaptable to the practice or requirements in electric railroads."

Also, at p. 425:

"Q. 24. Look at the model of the Thyng truck and state whether or not you find provision therein for such strains and a cushioning against such strains.

"A. I do not."

H. H. Adams testifies (p. 440):

"RDQ. 54. You are in the market for a large number of modern high-speed trucks at the present time; state whether or not you would accept a bid for trucks made like the *Thyng* model which opposing counsel has called your attention to.

"(Question objected to as manifestly incompetent, irrelevant and without the issues.)

"A. I should not want to consider a truck with a link suspension of that character."

W. E. Harrington testifies (p. 463, Q. 33):

"Q. 33. In your opinion, would you consider that the truck shown in these photographs is a sufficient practical truck for use in electric traction, as practiced today, with large cars and heavy loads, and high speed, etc., as you have described?

"(Objected to as irrelevant to any issue in this case.)

"A. No."

W. G. Price, a practical truck builder, testifies to the inoperativeness of the Thyng truck at pp. 483, etc., beginning with Q. 35.

W. S. Adams testifies that the Thyng model ("Defendant's Exhibit, Thyng Truck") does not correctly represent the structure of the Thyng patent (p. 543, Q. 72).

2. Buck Patent as Viewed by Practical Men.

W. S. Adams testifies to the inoperativeness of the Buck truck in modern electric street railway practice at p. 535, Q. 34, etc. He produces an enlarged drawing of the Buck patent, p. 536, Q. 39, and shows by dotted lines thereon the outline of a motor *between* the axle and the bolster, and also of a motor supported *outside* the axles, and shows how *either location* would interfere with the necessary parts of the Buck truck, and would therefore be impossible. This drawing is marked "Enlarged Buck Patent Drawing." It was offered at p. 548 and is reproduced at p. 149. He testifies again at pp. 548,549.

Mr. Akarman, looked at the "Defendant's Exhibit, Model Buck Truck" and testified (Rec., p. 433, XQ. 85):

> "A. In answer to that, I will say that the model shown is what I generally term a *freak truck,* having no single qualification to recommend it.
>
> "XQ. 86. Don't you think you are rather partisan?
>
> "A. I don't. I don't think you could find a single railroad man in the country who would take a given number of those trucks as a gift, providing he was compelled to operate them. I wouldn't."

Also p. 426:

> "Q. 33. Please look at 'Defendant's Exhibit, *Buck* Truck,' and state whether or not that construction is suitable for modern electric street railway practice?
>
> "A. It is not practicable for many reasons; the construction precludes the equipping with electric motors; it also necessitates *too great a distance between wheel centers, and is in every way* incomplete and *not mechanical,* and in *no way adapted* to the requirements."

W. G. Price gives his practical opinion on the *Buck* truck (p. 488, Q. 55. etc., and p. 497, XQ. 85, etc.). Also, he points out that the defendant's Buck model is incorrectly made (p. 490, Q. 60).

3. Brill & Curwen Patent No. 610,118 (dated August 30, 1898).

As stated above, these patents were issued thirty-two months after the invention of the truck of the patents in suit and twenty-nine months after the first of such trucks had been *actually built and shipped*. The application for the Brill & Curwen patents was filed November 3, 1896, which was more than ten months after the invention of the subject matter of the patents in suit and more than seven months after the shipment of the first trucks built under the patents in suit. According to these dates, therefore, the Brill & Curwen patent is not a part of the prior art.

Obviously, it is not made a part of the prior art by the disclaimer contained in the parent patent in suit. Judge Bradford, in the North Jersey case, clearly shows this. He quotes from the specification of Brill & Curwen to show that Brill & Curwen is an improvement on the old style of hanging the bolster and the "sand plank" from the transoms, the point of support of the transoms from the bolster being within the side frames. A truck of this "sand plank" construction is found in Record at p. 163, upper cut. ["*S. R. J.*, May 3, 1902."]

Brill & Curwen was an improvement *on that style,* and the quotation made by Judge Bradford from the Brill & Curwen patent "satisfactorily explains," as Judge Bradford says, "the meaning of the alleged disclaimer in the latter patent. All that was meant was that the patentee did not claim that the mere location of the semi-elliptic springs 'outside of the wheel gauge' and location of the spring links 'closely adjacent to the axle boxes' involved novelty or patentability. The alleged disclaimer in no wise affects the right of complainants to a decree as to patent 627,898," (the parent patent here in suit).

Brill & Curwen was a *step in the direction* of the patents in suit from the old "sand plank" mode of suspension of the bolster from the transoms. But *it was only a step.*

Again, Mr. Brill, having filed his application for the Brill & Curwen patent, was bound, under the law and the practice of the Patent Office, when he subsequently filed his application for the patents in suit, to *refer therein to his former application.*

Thus it was held in *Anderson* vs. *Collins,* 122 Fed. Rep. 451:

> "Where each of several applications which subsequently ripen into patents to the same inventor discloses all the inventions claimed in all the applications, and they are all pending at the same time, no one of the applications or patents can be used to anticipate any of the claims of any of the others it does not itself claim and secure."

Furthermore: *First.* The Brill & Curwen structure is an entirely different type of truck from the truck in suit. Its elliptic springs are *full* elliptics and they are arranged *transversely* of the truck; they rest upon the "sand plank" and support the bolster. On the other hand, the elliptic springs of the patent in suit are *half*-elliptic and are *longitudinally* arranged outside of the wheels. Again, the equalizing bar of the Brill & Curwen truck is a *rigid bar,* while in the patents, in suit the half-elliptic spring acts as an equalizer. In Brill & Curwen the links swing *only transversely,* in Brill they swing both transversely and longitudinally.

Second. Any contention on the part of the appellee that the Brill & Curwen patent affects the question of the novelty of the patents in suit is entirely contrary to the position which the Peckham Company took in the interference proceedings in the Patent Office between the Uebelacker-Peckham application and the Brill application, the record of which is here in evidence. This appears as follows:

In this interference, claim 10 of the first patent in suit was made count 3 of the interference (pp. 3, 4 of the interference record). The declaration of interference states that this count covers claims 1 to 11, 13 and 15 to 21 of the Uebelacker application. That is, 19 of the Uebelacker claims were such that they were brought into the interference issue with a Brill claim, which is now claim 10 of the first patent in suit and which, of course, covers the truck in suit. Thereupon, Uebelacker, in his preliminary statement, made oath that he had conceived *the invention defined by the issue* set forth in the official declaration of interference and also the invention covered by the 21 claims of his application involved in this interference, as early as the 15th of July, 1897. (P. 8 of Interference Record.)

Obviously, therefore, the Uebelacker-Peckham application claimed the *broad features* of the invention of the patent in suit; that is, it claimed the invention of *the truck in suit*. Now, bearing this in mind, it also appears that the Patent Office, prior to the declaration of interference, cited against certain Uebelacker-Peckham claims the "Brill 1st Circular" entitled "A Perfect Passenger Truck." It shows a cut of a Brill & Curwen truck. In response to this communication from the Patent Office the attorney for the Uebelacker-Peckham application wrote the Patent Office as follows (p. 747 of the file wrapper):

> "The Brill circular, 'A Perfect Passenger Truck,' does not show a truck embodying the combination of claim 16, since in the Brill truck there are no half-elliptic springs arranged between the upper and lower longitudinal beams of the side frames, the said half-elliptic springs supported at their upper ends by link appliances flexibly suspended from the upper side beams. Brill's truck (Brill & Curwen) embodies a spring plank arranged transversely of the truck, supporting full elliptic springs which in turn support the bolster, the said spring plank being itself supported on equalizing bars suspended by spring appliances from the upper side beams of the truck. *This is distinctly a different organization from that of the applicant.*" (Italicized in original copy.)

Now Uebelacker-Peckham claim 16 (which appears p. 745 of the file wrapper) obviously covers the *broad features* of the invention of the patent in suit. After the interference was decided in favor of the Brill application, this claim was bodily and verbatim transferred to the Brill application and became claim 91 of the first patent in suit. It covers the broad features of the truck here in controversy, and also specifies, as a detail of the structure, a *lower* side beam, which is not found in either of the defendant's infringing trucks—a mere detail of construction.

In the Patent Office, then, the applicant (the Peckham Company) claiming the broad features of the patent in suit and being confronted with the Brill & Curwen truck, took the ground that that Brill & Curwen truck showed "distinctively a different organization from that of the appli-

cant." Obviously the defendant is not in a position to claim that the Brill & Curwen structure is for the same organization as the truck of the patent in suit—a position utterly inconsistent with that maintained in the Patent Office.

The comparison of the *language* of certain claims of Brill & Curwen with that of certain claims of the first patent in suit is entirely futile. The claims are mere *words*. The *structures described* are entirely different organizations.

Again, Mr. Livermore points out, pp. 506 and 507, that even if we assume that this Brill & Curwen truck performs all of the functions of the Brill patents in suit, still the truck of the patents in suit makes a *single element*—the longitudinally disposed semi-elliptic springs— perform the work of *three distinct parts* or elements in the Brill & Curwen truck, namely: rigid equalizing bars, the spring plank and the full elliptic springs interposed between the spring plank and the bolster, and that this is *an advance in the art* because it substitutes *four* elements for *six*.

W. S. Adams testifies that the Brill & Curwen is a much heavier and a much more expensive truck than the Brill truck in suit (p. 562, Q. 193).

Also, that it has no longitudinal swing of its links (p. 546, Q. 91, 92).

4. Overbagh Patent.

We need only refer to *W. G. Price's* testimony of this device at p. 483, Q. 48, etc., and p. 496, XQ. 79.

Also to *W. S. Adams,* p. 541, Q. 62, etc., and p. 590, XQ. 399.

Also to *W. E. Harrington,* p. 466, XQ. 45.

5. Peckham Motor Hanger Patents.

W. G. Price refers to these devices at p. 492, Q. 66.

W. S. Adams at p. 558.

6. Haskins' Patent.

We refer to *W. S. Adams,* p. 544, Q. 77, etc., and p. 592, XQ. 407.

7. Various Other Patents Set Up.

W. S. Adams testifies to the practical lack of adaptability of the various other devices set up. We indicate the places where his testimony will be found.

Graham, p. 547.
Beach, p. 551, 588.
Davenport & Bridges, p. 554, 593.
Boughton, p. 556.
Taylor (three patents), p. 556, 557.
Longstreth, p. 557.
Heffernan, p. 558.
Baker, p. 558.
Cooke, p. 559.
Romans, p. 558.

The constant, reiterated statement and contention of Mr. Freeman is that the "ordinary skilled mechanic" would, in the various old structures, see the Brill truck in controversy; the entire defense is based upon it; but the *practical truck man, W. S. Adams*, thus disposes of that theory. (P. 559, Q. 177):

> "Q. 177. Please state whether or not you agree with these statements as to the ordinary skilled mechanic.
>
> "A. I do not agree with this statement. I *am one of the patentees mentioned* and had been working on trucks exclusively for over five years previous to my taking out the patent referred to, in 1895; *it did not occur* to me to make such substitution stated, notwithstanding the fact that *it was a very valuable feature* in truck construction, both *mechanically and financially*, and I do not consider that it would have occurred to any skilled mechanic to make this substitution."

Having shown, as we believe, the insufficiency of the entire prior art set up, we now take up the

Opinion of Mr. Livermore on the Prior Art.

Mr. Livermore, appellants' expert, fully considered all the evidence of Mr. Freeman. We ask the court's attention

to his testimony and simply note the pages in appellants' record where he discusses each of the patents considered by Mr. Freeman:

Finally, Mr. Livermore sums up his opinion with respect to all the testimony of Mr. Freeman, as follows (Rec., pp.518, 519, 521 and 522):

> "Mr. Freeman, as I understand his testimony, regards the construction characteristic of the Brill truck as lacking in novelty, in view of the combination shown in the Thyng truck and of the knowledge of spring links in various other combinations illustrated in the patents above considered by me, showing spring links. In connection with his consideration of the spring links of the Peckham patent, No. 563,685, used as a motor support, Mr. Freeman says:
>
> > 'It is obviously within the province of the ordinary mechanic, skilled in the art of truck construction, to substitute this Peckham link for the particular form of links employed in any one of the patents above referred to for connecting the ends of semi-elliptic equalizer springs with the frame of the truck. Take, for example, the Thyng construction; the Peckham link is obviously as well adapted for supporting the opposite ends of

the semi-elliptic springs of this patent, as it is for supporting the motor in the Peckham patent.'

"There is, however, in the Peckham patent, as well as in the other patents showing spring links, nothing whatever to indicate to the assumed skilled mechanic any desirability of making the substitution referred to, or that any new or beneficial result would be obtained by the combination of spring links with the semi-elliptic springs and the truck frame and bolster as shown in the Brill patents; and an equally natural, if not the only logical substitution, if it were desired to employ spring links such as constitute the motor support in the said Peckham patent, in a truck structure like that of the Thyng patent, would be to substitute them for the nearest equivalent found for them in the old structure, namely, for the semi-elliptic and non-elastic shackles, giving a construction such as is exemplified in the Beach patent No. 173,257, above considered by me, which shows a truck similar to the Thyng truck, except that spring link hangers are employed to suspend the bolster from the truck frame in place of the spring hanger system comprising semi-elliptics and non-elastic links which characterizes the truck of the Thyng patent.

"On the other hand, taking the Thyng patent as the basis, *there is nothing* in the construction there shown, nor in other truck constructions containing a similar spring system, comprising semi-elliptic springs and non-elastic shackles or link hangers, *to indicate to the skilled mechanic* any adequacy in the spring system, as such; *nor to indicate how such inadequacy could be best remedied* if the attempt to put the truck into practical service should show that the truck was deficient in its spring system, or otherwise.

"*With the solution of the problem before one, as given in the Brill patent sued upon,* it appears as if such solution was attainable from the materials at hand in the prior art by bringing into combination old elements which were previously known in other combinations, but I am decidedly of opinion that in the absence of the knowledge now derivable from the Brill patents and the extensive practical use of trucks embodying

the characteristic combination of the Brill truck, there was nothing in the prior art structures, individually or collectively, to lead to the discovery or production of the combination which characterizes the Brill truck.

"It seems to me that this opinion is strongly confirmed by the fact that *in the more than fifty years which elapsed* between disclosure afforded by the Thyng patent and the production of the Brill truck, which up to date appears to be the final solution of the truck problem, it occurred to no one to make the substitutions or changes which Mr. Freeman now asserts are *obviously within the province of the ordinary mechanic* skilled in the art of truck construction; and furthermore, the various trucks produced in the fifty or more years, between the time of the Thyng truck and the production of the Brill truck, and referred to in Mr. Freeman's testimony as showing generally similar organizations, do not indicate any progress or growth in the *direction* of arriving at the structure forming the subject of the Brill patent, all of the trucks in the said intervening period being, if anything, more remote from the Brill structure than the one shown in the Thyng patent over fifty years before.

"With the *knowledge derived from the Brill patents* here sued upon, and from the extensive introduction of trucks embodying the construction shown in said patent, it is *now* obvious that a highly efficient truck can be produced by a structure similar to that of the Cooke, and Brill and Curwen patent, except that in place of the rigid equalizer bars, sand plank and elliptic springs supporting the bolster, semi-elliptic springs or elastic equalizer bars, as Mr. Freeman calls them, are employed.

"The Cooke, and Brill and Curwen patents, however, seem to me to show conclusively that what Mr. Freeman *now* points out as an obvious fact was not known to, or recognized or discovered by, the inventors of the structures forming the subject of these patents at the time when the structures forming the subject of said patents were invented by them, as it is inconceivable that they should have adopted the more complicated and cumbersome construction shown in said Cooke, and Brill and Curwen patents if it were recog-

nized that all of the results and advantages accruing from said construction, and more, could be attained by the simpler construction forming the subject of the Brill patents here sued upon, by a combination involving a less number of elements to perform all of the functions and some additional ones, as was pointed out by me when I first considered the truck of the Brill and Curwen patents in the early part of my answer to the third question."

He expresses his final opinion thus (p. 522):

"For the foregoing reasons, I am of the opinion that the truck shown and described in the Brill patent here sued upon and referred to in the claims thereof, in issue in this case, is substantially different from each and all of the structures of the prior art, and is not anticipated or foreshadowed in any way in the prior art structures."

THE UEBELACKER-PECKHAM APPLICATION AND THE BRILL-UEBELACKER INTERFERENCE AND THEIR BEARING ON THE ISSUES HERE INVOLVED.

We come now to a vitally important branch of the case, bearing both on the validity of the patents in suit and on infringement—the Uebelacker-Peckham application and the *Brill-Uebelacker interference*. APPELLEE'S COUNSEL HAVE ENTIRELY OVERLOOKED IT BOTH IN THEIR EVIDENCE AND IN ALL THE ARGUMENTS THEY HAVE MADE.

The Brill truck in suit was invented in December, 1895, and an application for a patent on it was filed July 3, 1897. In the spring of 1897 the Peckham Company sent their mechanical engineer (Uebelacker) to examine and take measurements of the new Brill trucks of this type at Newark. He copied the trucks and (on October 25, 1897,) applied for a patent on his imitation, assigning his application to his employer, the Peckham Company. This application came into interference with the pending (and prior) Brill application, which interference proceedings are now to be considered.

We will show:

1. That the Uebelacker-Peckham application was for a patent covering the *structure of the Brill truck* here in controversy.

2. That the Patent Office cited against that application the principal patents for truck structures which are now set up against the validity of the patents here in suit.

3. That the (Uebelacker-Peckham) applicant thereupon took the position in the Patent Office that those earlier patents did not disclose the subject matter of its application, and that notwithstanding them it was entitled to a patent on the *broad features* of the truck (being the one here in controversy).

4. That an Interference was thereupon declared between the Brill application and the Uebelacker-Peckham application. The decision therein was adverse to the Uebelacker-Peckham application which obviously involved the patentability of the structure at issue, and was based upon the identity of the subject matter of the respective applications involved in the Interference, and estopped the defeated party (Uebelacker-Peckham) from now setting up that the subject matter of that issue was not patentable, and that the subject matters involved in the Interference were not identical.

If these facts be made to appear, they demonstrate that the present contention of the Peckham Company, is *directly contrary* to the position which it took and insisted upon in the Patent Office on the *precise questions* here in controversy. The *privity* between the old and new Peckham companies is admitted. (Record, p. 233.)

(As the patent was issued [so far as relates to matters discussed here] substantially in the form of the original application, we will refer to the *patent* instead of to the application.)

The drawings of the Uebelacker-Peckham patent show the *broad features* of the truck in controversy. (See Record, p. 330.)

The specification of that patent undoubtedly describes the same truck.

The object of the improvement is stated in the patent, not as a mere *improvement* in trucks, but "*to construct a truck*—particularly adapted for carrying heavy car bodies in

high-speed service—which shall support upon it a car body, through the instrumentality of a suitable centre-bearing bolster, in such manner that longitudinal, as well as transverse movement of the car body and supporting bolster, with relation to the truck structure, may be provided for, so as to neutralize shocks imparted to the truck before such shocks can be transmitted to and affect the car body." (See patent, lines 16-28, p. 1. Record, p. 333.)

The links suspending the half-elliptic springs are described as being "adapted to swing, thus providing for changes in the span of the [half-elliptic] springs, produced by varying loads, and for the swinging of supporting said springs and the car body bolster resting thereon *longitudinally* as well as *laterally* with relation to the truck frame." (See patent, lines 127-133, p. 2.)

Now referring to the file wrapper of the Uebelacker patent. After the filing of the Uebelacker-Peckham application, the first action of the Patent Office was a rejection of almost all the claims on a reference to the Thyng patent. One claim was rejected upon a reference to the "Brill 2d Circular," which shows the truck of the Brill & Curwen patent, 610,118.

In answer to a part of this rejection, the attorney for the applicant stated (page — of file wrapper):

> "This special combination is not shown by Thyng or by Brill [2d Circular, disclosing Brill & Curwen truck]."

On January 4, 1898, the Patent Office wrote Uebelacker's attorney again, stating that the Thyng patent was a "reference" as to certain of the claims and rejecting those claims. In response to this, on January 17, 1898, Uebelacker filed an amendment cancelling certain claims, and adding a new claim, as follows (pp. 743, file wrapper):

> "1. The combination, in a car truck, of the side frames comprising pedestals, upper duplex beams and lower beams between the pedestals, axle boxes in the pedestals, springs between the axle boxes and the tops *support the bolster, and spring-supporting links* which pass between the members of the duplex beams and *are supported from their upper edges.*"

It will be observed that the only difference between this claim and the Brill structure shown in patent 627,898 in suit, lies in the fact that in this claim the upper beams are *duplex* (in two parts), while in the structure of Brill these beams are solid, but this was held by the Patent Office to be immaterial. This new claim 1, just mentioned, also has lower side beams, which are mere braces connecting the lower part of the pedestals, and having no relation to the matter in controversy.

Following this amendment, the Patent Office (p. 744 of file wrapper) stated that the Uebelacker-Peckham claims were in condition for allowance, therein including this claim 1. Thus, the applicant had then taken the ground and succeeded in establishing its position that there was nothing in the "references" (Thyng, Adams and Brill & Curwen) to prevent a grant to it of a patent for a truck which is substantially identical with the truck here in controversy.

Following this statement of the Patent Office, Uebelacker-Peckham filed an amendment, dated February 2, 1898, in which certain new claims were inserted, together with the words (p. 745 of file wrapper) "and *preferably* duplex," showing that Uebelacker considered his duplex construction of the upper beam the same as the Brill solid beam with a hole through it for the swing of the link.

In this amendment, claim 12 was added, which obviously described many of the essential features of the truck of the patents in suit, viz.:

> "12. In a car truck, the combination, with the side frames, each comprising two pedestals and upper and lower beams, of a car body supporting bolster, a plurality of half-elliptic springs arranged between the upper and lower longitudinal beams of the frames and connected to the ends of the bolster, link appliances connected to the ends of said half-elliptic springs, and flexibly supported at their upper ends on said upper beams."

Then followed the rejection, February 9, 1898 (page 746 of the file wrapper) of some of the claims added in this latter amendment (including this claim 12) on a reference to the Thyng patent, the Adams patent, 538,858, and the "Brill 1st Circular," entitled, "A Perfect Passenger Truck," which is offered in this Record at page —, Defts.' Rec., and which shows the Brill & Curwen truck.

On February 25, 1898 (file wrapper, p. 747), the applicant objected to the rejection of claim 12 on the first two references, and wrote the office in the following words:

> "The Thyng patent cited for this claim is not an answer, particularly because the links which support the ends of the half-elliptic springs are not *flexibly supported* at their upper ends on the upper beams of the truck frame. Besides the Thyng truck frame does not comprise upper and lower longitudinal beams connecting pedestals together. The feature of flexibly supporting the suspending links at their upper ends on the upper beams of the truck frame clearly differentiates this claim from the Thyng patent. [Italics as in original.]
>
> "Adams also cited for claim 12 does not anticipate the claim because, first, there is in the Adams truck *no car body supporting bolster,* the support for the car body comprising rub plates located above the upper beams of the truck frame; secondly, the links from which the half-elliptic springs are suspended from the upper beam of the truck frame are not *flexibly supported* at their upper ends on the upper beams of the truck frame. These two features clearly differentiate claim 12 from the Adams patent."

Again, when claim 12 was added by amendment, a new claim, 16, was also added, which will be found at page 745 of the file wrapper, and which covers the essential parts of the truck in controversy. It was in the following words:

> "The combination in a car truck of side frames comprising pedestals, upper and lower side beams connecting the pedestals, axle boxes in the pedestals, a bolster, half-elliptic springs which support the bolster, *links* and *spring supports* therefor supported *from* the *upper beams* and supporting the half-elliptic springs between the upper and lower beams."

This new claim 16 was also rejected on the Thyng patent and the same "Brill 1st Circular," entitled "A Perfect Passenger Truck," which discloses the Brill & Curwen structure. (It contained several of the essentials of claim 13 of Brill patent, 627,898, and is, in some aspects, *broader* than that claim since the links are not [as in claim 13] described as *movable.*) In response to the rejection of this

claim 16, the attorney for the Uebelacker-Peckham application wrote the Patent Office as follows (file wrapper, p. 747):

> "This claim is not met by Thyng of record since the Thyng patent does not show lower side beams connecting the pedestals, and particularly does not show *spring supports* suspending the links—*which support the ends of the elliptic springs—from the upper beams. This is an important feature in the applicant's organization.*
>
> "The Brill Circular 'A Perfect Passenger Truck,' does not show a truck embodying the combination of claim 16, *since in the Brill* [*Brill & Curwen*] *truck there are no half-elliptic springs arranged between the upper and lower longitudinal beams of the side frames, the said half-elliptic springs supported at their ends by link appliances flexibly suspended from the upper side beams.*. Brill's truck [Brill & Curwen] embodies a spring plank, arranged transversely of the truck, supporting full elliptic springs, which, in turn, support the bolster, the said spring plank being itself supported on equalizing bars suspended by spring appliances from the upper side beams of the truck. *This is distinctively a different organization from that of the applicant.*"

We submit that the above facts are sufficient to establish beyond question that the Uebelacker-Peckham application was urged for a patent covering the *essential features* of the Brill truck; that the most important part of the prior art here set up and chiefly insisted upon was cited in the Patent Office against the allowance of claims for the *broad* invention; and that the applicant then and there took the position that he was entitled to a patent for the *broad features* of the truck, notwithstanding this same prior art.

There can, of course, be no question that the interference contest which followed was on the *broad features* of the Brill truck, and that the only question there was as to who was the first inventor of ***that*** *truck*. Priority was awarded to Brill without any contest over the facts, because, while Brill in his Preliminary Statement alleged invention extending back into 1895, the Uebelacker-Peckham Preliminary Statement did not carry his *date of conception* of the *invention* there in controversy *back* even to *the date of application for the Brill patents in suit.*

We will give a rapid sketch of the interference proceedings:

THE FACTS AND ARGUMENT AS TO THE CONCLUSIVENESS OF THE INTERFERENCE PROCEEDINGS.

July 3, 1897, the original Brill application was filed.

October 25, 1897, the Uebelacker application was filed.

November 9, 1897, the original Brill application was divided into three applications. The various claims thereof *had been allowed* and were ready for issue prior to May 10, 1898, the date on which the interference was declared between the Uebelacker application and the three Brill applications.

Now an interference in the Patent Office is defined as follows (*Hammond* vs. *Hart,* 1898, Com. Dec. 52, *Duell,* Commissioner):

> "An interference is a proceeding intended for the purpose of determining the question of priority of invention when two or more parties claim substantially the same *patentable invention.*"

The object of this rule is obvious. Clearly it would be a waste of public time for the Patent Office to hear parties, each claiming to be a prior inventor, until it had reached a point where both the office *and the parties* had come to the conclusion that the subject matter for which they contend is a *patentable invention,* about which it is worth while to contest. It would, of course, be futile for the Patent Office to permit litigation until such a point had been reached. The contest *must* be over a *concededly patentable invention.*[1]

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[1] "In the sense of the Patent Law there can be no interference unless there is *patentable invention* and there are rival claimants of it."

Oliver v. *Felbel,* 20 App. D. C. 262.

In *Orcutt* v. *McDonald,* 27 App. D. C., 228, 234, it was held that: "The question of patentability is not ordinarily regarded as open on appeal to this Court in an Interference Case but is to be regarded therein as *conclusively established* by the Commissioner of Patents."

The point here raised is that the real defendant, when seeking a patent on the truck in suit, strenuously contended that it was patentably novel and procured a decision to that effect, in spite of the prior art set up against its application, which is the same prior art it now sets up against the patentability of the same invention.

As to what these parties were contesting in the Patent Office in these proceedings we will proceed to show. But we must first go back a few steps in order to explain the respective situations of the two parties just prior to and on May 10, 1898.

Prior to the declaration of interference and about February 3, 1898, Uebelacker was notified by the Patent Office that his claims were in a "condition for allowance," but would be held back for a possible interference with other pending applications. Then Uebelacker proceeded to insert certain new claims, one of which was claim 12 [which subsequently became count 7 of the interference]. This claim was thereupon rejected on a reference to the Thyng patent, No. 4726, of 1845, and Adams, 538,858 of 1895, which have been much relied upon by appellee as anticipations in the case at bar. Uebelacker opposed this rejection on the ground that these were not pertinent references and submitted an argument in support of his opposition to the rejection of that claim. (This appears at p. 747 of the file wrapper and is further referred to in the testimony of Mr. Livermore, Rec., p. 522, Q. 5.)

The examiner thereupon withdrew his objection to claim 12 as based on these references, but again rejected claim 12 on the Brill catalogue in evidence "No. 27-D. The Universal Truck." Immediately thereafter, without action by Uebelacker, he was notified (p. 747, file wrapper) to amend his application in seven days in view of a probable interference. Then followed an amendment by Uebelacker inserting additional new claims and arguing against the pertinency of the said Brill catalogue as affecting his claim 12, and further stating that his invention (Uebelacker's) was made before the date of the letter from David Young printed in said Brill catalogue.

Thereupon (May 10, 1898), the examiner, apparently convinced by Uebelacker's argument, allowed claim 12, among others, and declared an interference in which claim 12 of the Uebelacker-Peckham application became count 7 of the interference. The first six counts were six claims taken from Brill's applications, and each of these six counts are stated in the declaration of interference to "cover" certain other Brill claims, and also to "cover" certain of the Uebelacker claims. (See Declaration of Interference, pp. 2 to 5. Interference Record, offered p. 44, C. R.)

Count 7 is stated to be claim 12 of Uebelacker and to "cover" a number of other Uebelacker claims, as well as certain Brill claims.

It will be borne in mind that at this time (May 10, 1898) the Uebelacker claim 12, among others, was *ready for allowance* by the Patent Office, subject only to the interference about to be declared. This meant, of course, that Uebelacker's claims to the *broad features* of the truck had been *insisted upon by the applicant* and *allowed* by the office as containing *patentable subject matter* over and above the prior art cited against it—Thyng, Adams and Brill & Curwen.

Similarly the Patent Office had also previously passed on the question of the patentability of all the claims in the three Brill applications (including the six Brill claims that subsequently became counts in the original declaration of interference) because, as stated above, no interference is ever declared between two applications until the Patent Office has decided that the parties have allowable claims covering "substantially the same *patentable invention.*" That is, an interference is never declared until both applicants' claims (1) for patentable subject matter (2) have been found by the office to be allowable claims. (*Hammond* vs. *Hart,* C. D. 1898, p. 52, opinion dated April 25, 1898.)

Let us repeat again that of the seven counts of the interference as originally declared, the first six were (respectively) Brill claims that had been allowed, and covered also various Uebelacker claims that had also been allowed. Also count 7 was claim 12 of Uebelacker that had been allowed and covered also claims 1 to 11, 13 and 15 to 21 of Uebelacker, also various claims of Brill.

For the present purposes it will only be necessary to discuss the interference proceedings so far as they relate to claim 13 of the Brill patent 627,898 in suit. (One of the two claims here urged.)

Count 2 was in the language of claim 13 of the original Brill application, and which subsequently became claim 13 of the patent 627,898 in suit.

Count 7 was in the language which was originally claim 12 of the Uebelacker application, which claim is above referred to as covering or relating to the broad features of the truck here in controversy. (It was subsequently cancelled from the Uebelacker application after priority of in-

vention had been awarded to Brill on the broad features of the truck, as not being patentable over Brill.)

Then the parties filed their preliminary statements (the averments of which have been held by McKennan, J., in *Kirk* vs. *DuBois,* 33 Fed. Rep. 252, to be a matter of "decisive significance").

What was the subject matter upon which the Uebelacker-Peckham application was trying to secure letters patent? Clearly, the *broad features* of the truck in controversy, as we shall now show.

Claim 13 of the Brill application and claim 12 of the Uebelacker application (which were in the same words as counts 2 and 7 of the interference) are clearly directed to the broad features of the Uebelacker truck.

Uebelacker in his preliminary statement (pp. 778,779, Int. Rec.) set forth under oath *after the prior art had been cited against* him:

> "That affiant conceived the *invention defined by the issue set forth in the official letter of declaration of interference,* and also the *invention covered by the twenty-one claims of his application* involved in this interference, as early as the 15th of July, 1897."

This is obviously a claim to the *broad features* of the truck in controversy, as the statement necessarily extends to the invention of the entire subject matter of the interference, *i. e.,* the invention of the truck for which both parties were contending.

If it be urged that count 7 of the interference (claim 12 of Uebelacker) included the structural element of the *lower chord,* it is sufficient to reply that all the other counts, 1, 2, 3, 4 and 6, cover the broad features of the trucks *without reference to this lower chord.* These counts were also part of "the invention defined by the issue" in the declaration of interference which Uebelacker stated, on oath, that he had invented.

Clearly, therefore, this interference involved:

1. *Patentable subject matter* which had already been determined by the Patent Office *to be such.*

This was the position taken by Uebelacker, and we are now concerned only with the question as to what that applicant contended for in the Patent Office.

2. The scope of the interference issue. The interference covered the *broad features* of the trucks of both applicants, and was necessarily based upon the *identity* of the two structures before the Patent Office, else there would have been no interference.

We submit that we have thus shown that the contention of Uebelacker-Peckham in the Patent Office was directly contrary to the position now taken by counsel for the Peckham Company, the real defendant here. It is not necessary to proceed further with the interference proceedings.

(We may, however, state that while, upon a technical ground, this interference was dissolved as to certain counts, yet it became final as to counts 5 and 7, and as count 7 included the above-mentioned claim 12 of the original Uebelacker-Peckham application, covering the truck in controversy, the final judgment in the interference settled that issue.

The interference was dissolved as to counts 1-4 and 6 under the ruling in the case of *Hammond* vs. *Hart* (Com. Dec., 1898, p. 52), made just at the time of the declaration of this interference, which required *verbal identity* of claims on the part of the two applicants before they could be put into interference. That is, where there seems to be the same subject matter in conflicting applications, the parties are directed to make their claims identical in *tenor and scope,* so that an interference may be declared. The interference here had been declared just before this new rule was announced, and was under the old practice as defined in *ex parte Upton,* C. D. 1884, p. 26. That case announced the rule that if the claim of one party will include the invention of the other party, in whole or in part, there is an interference in fact. After the new rule (*Hammond vs. Hart*) had been formulated by the commissioner, a part of this interference was dissolved as obnoxious to that rule, *not* because the *subject matter* of the respective claims differed, but because the precise *words* of the respective claims differed.

Then there was a redeclaration of interference, the counts of which will be found at page 895 of the Interference Record. This, obviously, covered the *broad features* of the truck here in suit. Uebelacker again (page 901) filed a Preliminary Statement, setting forth that *he had invented the subject matter* of this new interference as early as July 15, 1897. That is, he claimed the *broad features* of this truck. Thereupon priority of invention was again awarded to the Brill application.

We submit that this record shows conclusively that the Peckham Company in its application took, and, through a long fight in the Patent Office, endeavored to maintain the position that it was entitled, as assignee of Uebelacker, to a patent for the *broad features of the truck in controversy*, notwithstanding the prior art set up against its claims to the broad invention; and that the prior art set up against it was chiefly the same art which the Peckham Company now sets up against the validity of the Brill patents in suit covering the same invention (including the Thyng, Adams and Brill & Curwen patents.)

Cases on the Effect of Interference Decisions.

Thomas & Sons Co. vs. *Electric Porcelain Mfg. Co.*, 111 Fed. Rep. 923, was quite similar to the present case. There, as here, the defendants derived their title from a defeated applicant in the Patent Office, involved in an interference proceeding with the complainant. Archbald, J., said:

> "As to the question of patentability, which is the only thing left, while Locke, or those claiming under him, may not be estopped from contesting it, yet, considering that Locke himself endeavored to obtain a patent for the same identical purpose, *copying the Boch application verbatim*, it does not come with good grace for him, or his assigns, to do so. *Shuter* vs. *Davis* (C. C.), 16 Fed. 565. He also virtually affirmed to its *patentability* in the affidavits of Cahoon and himself, presented to the Court of Appeals in the first interference proceedings."

In *Dickerson* vs. *De la Vergne Refrigerating Co.*, 35 Fed. Rep. 143, which was an application for a preliminary injunction, Lacombe, J., said:

> "The force of an interference decision is also sometimes supplied by the doctrine of estoppel; the party who has received a patent, or *who has asked for one,* being estopped from subsequently claiming that the *subject matter thereof was not patentable.*"

In *Shuter* vs. *Davis,* 16 Fed. Rep. 564, Wallace, C. J., said:

> "But it also appears that the defendants were parties in interest in the interference proceedings before the Patent Office between the complainants and Mark Davis . . . The question of priority having been determined in favor of the complainants in that proceeding is *res judicata,* as between the parties to it [citing cases]. The defense of want of *novelty* does not come with *very good grace* from parties who endeavored to procure a patent to be issued to Mark Davis for the same invention, but is undoubtedly open to the defendants."

Peck Co. vs. *Lindsay Co., 2* Fed. Rep. 688, was a motion for a preliminary injunction. Acheson, D. J., said:

> "Now, while the decision in favor of Shepard in the interference proceeding may not be conclusive against the defendants upon the questions of *anticipation and patentable* novelty now raised, yet, under the circumstances, *great weight,* I think, should be given to the action of the Patent Office in granting letters patent to the complainant. The *prima facie* case thereby established in favor of the complainant ought not to be overthrown at the instance of Webb [*the defeated party in the interference*] or those in privity with him, *without clear evidence* that the patent is void for the reasons now assigned. Such evidence I do not find in the case."

See also *Swift* vs. *Jenks,* 19 Fed. Rep. 641, which was a motion for a preliminary injunction by a party who had been successful in interference proceedings against the defendant.

See also *Celluloid Co.* vs. *Crolithian Co.*, 24 Fed. Rep. 275. *Hanford* vs. *Westcot,* Fed. Cas. 6022, per Nixon, J.

The appellee has never distinguished these cases.

UEBELACKER-PECKHAM PATENT COMPARED WITH THE THYNG AND HASKINS PATENTS.

The appellee here puts its chief stress on the Thyng, 1845, patent in connection with the Haskins carriage and Peckham motor support patents.

It is shown herein that the Brill & Curwen patents are no part of the prior art, having been issued about two years and a half after the truck of the patents in suit had gone into commercial use, and long after the application for these patents was filed. It need not be considered here.

We will show that *without an entire reorganization of both structures* (which would amount to patentable invention), neither could the "springs" of the Haskins patent be incorporated in the Thyng truck, nor could the Thyng truck be embodied in the Haskins structure.

The pertinent part of this inquiry is to determine whether the Haskins and the Thyng patents, when grouped together, as suggested by Mr. Freeman, could produce a structure which corresponds at all with that disclosed in the Uebelacker-Peckham patent and one which would be adapted to operate in the same way and produce the same results as clearly described and pointed out in that patent.

We have fully considered the Thyng patent above. Its specification states that its shackles provide only for a *transverse* swing of the bolster. This does not meet the requirements of the Uebelacker patent. Again the swing of the shackles in the Thyng is *below* the side bar and therefore the long links of the Uebelacker patent are not present. Nor is the flattening of the semi-elliptic springs under a car load provided for in Thyng. The appellee may urge that looseness in the joints of the Thyng shackles is sufficient provision for this purpose. If it is, it is an accidental and not an intentional provision. That it is not a *sufficient* provision is clearly demonstrated by the *positive provisions* made in the Uebelacker patent for this purpose, and is further demonstrated by the results of Mr. Pyott's experiments with the

Thyng trucks, which show it to be entirely absent. Obviously the truck of the Thyng patent was not organized for the service specifically recited in the Uebelacker patent, and it does not respond to the requirements of that patent.

Passing by very many other important distinctions, it does not teach the requirement of the complete and unhindered *longitudinal and diagonal swing* of the semi-elliptic springs and their hangers, nor has it a link swinging from the *top* of the side frame of the truck, or above it. It swings from *below* it. Further, there is no pretense that it taught the desirability of applying an additional spring (as a spiral spring) between the ends of the semi-elliptic springs and the side frame.

In a word, it fails to suggest any of the *characteristics* of the Uebelacker-Peckham truck.

And, furthermore, it would not be possible, without an entire reorganization of the Thyng truck, to incorporate into it the Haskins wagon spring. The appellee has given a physical demonstration of what, in its judgment, one would do (after one had become fully acquainted with the Brill invention) if called upon to organize a truck in accordance with the Thyng patent. This is shown in "Defendant's Exhibit, Model Thyng Truck." No one seems willing to stand sponsor for this so-called model, for Mr. Freeman (Record, p. 194) only says it is "in accordance with the Thyng patent as to its general features." It is inadmissible for any purpose. (See objection, Record, p. 200.) It is incorrectly made. (Rec., p. 414, Q. 54, 55.)

Without going into the question as to the unfairness of this model, as testified to by W. S. Adams (p. 197, Q. 543), owing to the incorporation therein of three separate and distinct forms of links culled from other patents, it will only be necessary to remark that, as constructed, it is absolutely without *suggestion of the desirability* of the essentials of the Uebelacker truck. An attempt is made to provide for them by incorporating in this model, on one end of one of the semi-elliptical springs, one of the Haskins springs. The desginer's best judgment resolves itself into the selection of that shown in Fig. 1 of Haskins. The model discloses that, as used, the pivotal point of the Haskins "spring" is far *below* the side frame (making a very *short* link), whereas in the Uebelacker-Peckham patent it is at the top of the side beam or above it, whereby a *long* link with a slow swing is secured,

The pivotal axis of the Haskins "spring" in the model is *longitudinal,* whereby only *transverse* swing of the "spring" is positively provided for in the Haskins patent. The moment the semi-elliptic springs of the model elongate (as they would under the pressure of a superimposed load), whatever looseness there is in this pivotal joint above the spring would be taken up, and the capacity for further longitudinal swing of the "spring" or link (so as to allow the transom to come against the bolster without putting a strain on either the spring or its support and the semi-elliptic spring) becomes impossible.

In the appellee's *reorganization* of the Thyng truck, by adding to it the Haskins link, it has not produced anything which even approximates the essential requirements of the Uebelacker-Peckham patent. It will be observed that the spring of Fig. 1 of the Haskins patent is adapted to swing *longitudinally*, but *not transversely*, of the wagon body.

Appellee may contend that a looseness between the pin *e* and the bolt c in Haskins will allow for this, but the same objection is present as in the model. The spring c, at the first instance of compression by a load will elongate and take up this looseness; further elongation of the spring c makes rigid the pivotal connection between the strap on the side bar B and the spring, thus not only preventing further transverse swing, but hindering longitudinal swing as well.

Not only did the appellee fail to prove that the Thyng truck ever went into practical use, but there is no evidence that a wagon was ever constructed in accordance with the Haskins patent. As inoperative as the Haskins patent is for the purposes of car truck practice, the moment it is analyzed it discloses an inherent want of capacity for substitution or incorporation into the Thyng truck, so as, in any way, even to approximate the Uebelacker patent. One of the absolutely essential features of a swing bolster passenger truck is that it must be permitted to swing freely and unrestrictedly, *transversely* of the truck. *In order to have any relevance at all to truck practice*, the spring C, in Fig. 1 of the Haskins patent, should have at least the capacity for a decided *transverse* swing relative to the wagon body A; but, as above pointed out, that is impossible in that structure. When the appellee *reorganized* Thyng and put this Haskins "spring" into this model, it threw in this *transverse* swing of the bolster, although not to a proper or practical

extent, and the only real and *intentional* swing of the Haskins spring (longitudinally of the wagon) was thereby eliminated.

It is clear, therefore, that neither in the Thyng patent nor in the Haskins "spring" is there any suggestion of the essentials of the Uebelacker-Peckham patent, from which even those skilled in the art could adapt one to the other *without entirely departing from the scheme of organization of either.* It is also clear that, when this adaptation was attempted, as the appellee has attempted it, *the structures respectively operate in a manner and secure results in operation entirely different from those which can be properly inferred from either the Thyng or the Haskins structures by any allowable process of reasoning.*

It is very clear, then, that the appellee has fallen very far short of success, *even with the Brill patents before it,* in demonstrating that the Brill *patents in suit involve nothing* but the sum of the functions of these old elements which have been selected from the old art and grouped together. It goes without saying that the appellee did not even conceive that these substitutions could be made *until after it had seen the Brill patents in suit.*

The logical result of this line of reasoning is that since it has been clearly shown that the express statements of the Uebelacker-Peckham patent and the features of construction of the Brill patents in suit are identical, what is true and applicable to the Uebelacker-Peckham patent in this regard is also true of the structures of the Brill patents in suit. This inference must be more strongly drawn in favor of the Brill patents, since, as regards the Uebelacker-Peckham patents, the Brill patents belong to the prior art and constitute the first instance of any suggestion of the very things which the appellee now says are most easily deducible from the Thyng and Haskins structures.

In the model of the Thyng truck there has been incorporated one of the motor links of the Peckham patent, 563,685 (which we have shown [*supra,* p. 42] to be of *too recent a date* to be relevant to this case). Now it is testified by Walter S. Adams (p. 543, Q. 74) that in the part (motor support) taken from this Peckham patent and incorporated in the model, the springs surrounding the bolts bear against the part of the truck frame through which the bolt passes, and that, for this reason, the motor-supporting bolt in Peck-

ham would not have the capacity for the *free swing* which has been *imparted* to it in this model. The springs *are not arranged in the model* as they are in the patent. If the upper coil spring in the model bore against the portion of the frame through which the bolt passes, the swinging action of the link would be *impeded*. If there be anything in the prior art which suggests even remotely the application of this Peckham bolt to the Thyng truck as a substitute for the Thyng shackles (which is denied), there was no warrant for the defendant *rearranging* the springs in the model so that the bolt would operate differently in the model from its necessary operation in the patent.

So far as relates to the *second* Brill patent in suit 627,900, and the Uebelacker-Peckham patent, it is sufficient to call the court's attention to the fact that the Peckham bolt is not articulated between its ends, so that, as to this feature of both the Brill and Uebelacker links, that Peckham patent of 1896 has not the slightest relevancy.

These prior patents typify the defendant's theory of substitution. If they cannot, within permissible bounds, be reorganized into the Uebelacker-Peckham truck, under the patent on which the appellee justifies, how can this so-called doctrine of "substitution" have even a remote application to the Brill patents in suit?

THE IDENTITY OF THE UEBELACKER-PECKHAM PATENT, UNDER WHICH THE APPELLEE JUSTIFIES, WITH THE BRILL TRUCK OF THE PATENTS IN SUIT.

The answer sets up that the trucks of the defendant (appellee) are made in accord with this Uebelacker-Peckham patent. We have shown above that Uebelacker, after he had gone to Newark and inspected the trucks of the patents in suit, in the spring or summer of 1897, and after going into the employ of the Peckham Co., was directed to design a truck for it, and apply for a patent thereon some nineteen months after the earliest Brill trucks had been built and put in use, and about nine months after he had become familiar with the construction of the Brill trucks operated by the Con-

solidated Traction Company (now the North Jersey Street Railway Company). We have also shown that this Uebelacker application was assigned to and was prosecuted in the Patent Office by the Peckham Company and the patent issued to it.

The claims of the Uebelacker-Peckham patent do not, of course, *now* cover the *broad* features of the Brill invention; the broad claims thereof were necessarily cancelled as a result of the decision in favor of Brill in the Brill-Uebelacker interference. But a consideration of the description and drawing of the Uebelacker-Peckham patent distinctly negatives the defense that the defendant's trucks do not infringe upon the patents in suit. This patent having been issued to the Peckham Motor Truck and Wheel Company, the predecessor of the company here justifying under it, the language of its description and the structure shown in its drawing become extremely pertinent evidence here on the question of identity.

We observe, at this point, that this whole subject has been disregarded by the appellee. Although the appellee justifies under the Uebelacker patent, it does not attempt to differentiate the structure described in it from that of the patents in suit. Its position is: We have a patent; we should be let alone. But no presumption of non-infringement is established by the issue of the Uebelacker-Peckham patent. The facts here establish a contrary presumption entirely in favor of appellants.

The appellee will no doubt contend that the interference proceedings have no bearing except as to priority of invention between Brill and Uebelacker. We think we have shown that they have a much more important bearing than that.

It appears from the express statements of the patents in suit, from the testimony of witnesses, and from the express statements of the Uebelacker-Peckham patent, that there are two main features in both appellants' and appellee's trucks. These features are as follows:

(*a.*) A combination of resilient or spring devices for supporting a bolster on the side frames. These devices consist specifically of a pair of longitudinally disposed semi-elliptic springs, with additional springs (specifically spiral springs) interposed between the ends of the semi-elliptic springs and the truck frame (and these spiral springs may be

either on hangers below the truck frame, as in the Brill construction, or between the upper ends of the hangers and the truck frame, as in the Peckham construction). In both instances these springs provide supports for the ends of the semi-elliptic springs, which supports are interposed (mechanically speaking) between the ends of the semi-elliptic springs and the truck frame. This is a specific location of parts whereby a new result is obtained, due to the different actions of the several kinds of springs employed, at their particular points or positions of location. The semi-elliptic spring is a *slow-acting* spring and responds slowly to the car movements. The spiral springs, located between the ends of the semi-elliptic springs and the truck frame, are quicker in their action and neutralize the slow action of the semi-elliptics, responding quickly to the car movements, which is very desirable. The specific location of the spiral springs (mechanically speaking) between the ends of the semi-elliptic springs and the truck frame not only enables them to absorb quickly any vertical stress placed upon the ends of the semi-elliptics, due to the action of the superimposed load or to the movements of the truck frame, but brings about a conjoint spring action, composed of the *quick* action of the spirals and the *slow* action of the semi-elliptics.

The benefits of this co-operative relationship, and the peculiar spring action resulting therefrom, are fully set forth by *Mr. Harrington* at page 461, Q. 21, etc.; p. 462, Q. 27.

THIS COMBINATION OF SPECIFIC SPRINGS IS CLEARLY SET FORTH IN CLAIM 15 OF BRILL PATENT 627,900 IN SUIT.

(*b.*) Such positive provision for movably supporting the ends of the semi-elliptic springs from the truck frame as will allow for a substantially universal (including a diagonal, a transverse and a longitudinal) swing of both the suspending appliances, the semi-elliptic springs and the bolster, in order to avoid placing any strain upon either the semi-elliptic springs or the suspending appliances, except the weight of the car.

The *intentional* organization of both appellants' and appellee's trucks is such that, considering the truck as a locomotive (which it is, carrying electric motors adapted to exert, as to each truck, anywhere from 50 to over 100 horse

power), no part of the enormous strain to which the truck is subjected (while starting or stopping the car, or by shocks due to the striking of curves, sudden change of grade, obstructions on the track, irregularities in the track, and the sudden reversal of the motors) shall substantially or materially affect either the suspending devices or the semi-elliptic springs.

In other words, in both appellants' and appellee's trucks, the lower end of the links and the semi-elliptic springs are adapted to remain stationary, relative to the forward movement of the truck, until the transoms, which are a rigid part of the truck frame, have moved forward against the bolster; whereupon the transom and bolster form the means for imparting propulsive movement to the car. This enables the semi-elliptic springs and their supports, including the interposed springs, *to act freely as spring supports* for the car body, performing their several functions without hindrance from the car movements. As to this, *Mr. Harrington* fully testifies at page 117, Q. 34.

Uebelacker's patent compared with the appellants' and appellee's trucks.

In the appellee's truck there is a pair of longitudinally disposed semi-elliptic springs directly secured to the bolster. The ends of these semi-elliptic springs are supported by devices which include spiral springs interposed between the ends of the semi-elliptic springs and the top of the truck frame. The ends of the semi-elliptic springs are supported upon the truck frame by devices which permit of the *free and intentional* transverse, diagonal and longitudinal swing of both the bolster, semi-elliptic springs and the suspending devices, free from the influences of the truck movements, as above set forth.

The appellants' truck embraces a bolster supported by longitudinally disposed semi-elliptic springs, and between the ends of these springs and the truck frame are interposed suspending devices which *intentionally* permit the free and unhindered swing of the bolster, semi-elliptic springs and the suspending appliances, longitudinally, diagonally and transversely of the truck frame, and uninfluenced by the truck movements.

It is conceded that the complainants' trucks of the patents in suit involve these two characteristics. They are both equally present in the defendant's trucks. In this connection the Uebelacker-Peckham patent, under which the defendant justifies, will be considered.

The Uebelacker-Peckham patent, as the outset, states that the invention therein disclosed "relates to improvements in car trucks intended particularly for elevated or heavy suburban electric cars." This indicates that these trucks are intended for the heaviest possible modern street car service—a service in some respects quite as exacting as that of steam roads; in some respects more so. The class of trucks disclosed in the Uebelacker-Peckham patent is "of that class known as 'double' trucks employed for supporting *long carbodies*, the car being mounted upon a pair of the trucks." The character of the employment is therefore precisely the same as that of appellants' trucks.

Again the Uebelacker-Peckham patent says, in stating the object of the improvements:

> "The object of the present improvements is to construct a truck *particularly adapted for carrying heavy car bodies in high-speed service* * * * in such manner that *longitudinal* as well as *transverse* movement of the car body and supporting bolster with relation to the truck structure may be provided for, so as to *neutralize shocks* imparted to the truck before said shocks can be transmitted to and affect the car body."

Figures 1, 2 and 3 of the drawings of the Uebelacker-Peckham patent illustrate the preferred form, while Figs. 4, 5 and 6 illustrate what the patent states to be a somewhat modified form. "The side frames of the truck comprise yokes or pedestals, 14, upper longitudinal beams 15 and 15a, connecting the pedestals together at the top and *preferably duplex*, and lower longitudinal beam 16 connecting the pedestals together at the bottom." The upper beams while preferably made *duplex* (that is of *two* thin bars juxtaposed) are evidently not necessarily made duplex, but the beam is so constructed, as the patent states at lines 67-69, page 1, as "to permit of the *requisite swing of the links supporting the half-elliptic springs.*" The patent further states that "the

truck has a short wheel base." In this aspect it is precisely the same as appellants' patent. The truck has "a swivel plate 26 to which the car body is adapted to be connected in the usual manner."

The Uebelacker-Peckham truck also has *"universal links 32"* which support the ends of the semi-elliptic springs 29. The patent also shows spiral springs 39 seated within a recess formed in the side frames and adapted to *"yieldingly resist vertical play of the bolt* 34," the bolt 34 forming a part of the *universal* link (see Fig. 1).

The Uebelacker-Peckham patent, therefore, states that the operation of the supporting links is identical with that of the Brill patent in suit, in which the spiral springs 34 yieldingly resist the vertical play of the lower portion of the link; that is to say, the ends of the semi-elliptic springs in both the Uebelacker-Peckham patent and in the Brill trucks, and also in the defendant's trucks, are so supported as to resist, yieldingly, vertical play relatively to the side frames. The Uebelacker-Peckham patent goes on to state as follows, lines 41-66, p. 2. (Before quoting this language it is important to observe that it was inserted in the Uebelacker Peckham application by way of amendment *after the termination of the interference proceedings, and after Uebelacker, his attorney, and the Peckham Co. had had full opportunity for considering at length the Brill applications and the structures disclosed and claimed therein.*) The language referred to is as follows (p. 2. l. 41):

> "In the construction described the suspending devices or appliances for the semi-elliptic springs *are increased in length by supporting the upper ends thereof from the upper edges of the upper side beams and preferably by supporting said upper ends at a distance above said upper edges.*"

(The Uebelacker-Peckham specification thus makes the supporting on the *upper* edges of the side beams (as in the Brill patents) the equivalent of supporting the suspending devices at *a distance above* the upper edges, the latter *preferably*.)

The Uebelacker-Peckham specification continues:

> "This is done in the construction of Fig. 1 by ex-

tending the springs 39, which support the bolts 34, a distance above said upper edges, as shown. *This lengthening of the suspending appliances is found advantageous, particularly because it gives an easier swinging bolster.* By means of the recess in bracket 35 the lengths of springs 39 are increased as they extend both above and below the supporting edges of the upper beams. *This gives a good elastic support.* The links 32 have a swinging motion on their supporting pivot pins. *There is also a further swing of the pivots themselves, owing to the elastic support at the upper ends.* The latter motion, which may result from LONGITUDINAL movement of the bolster, compresses spring 39 more on one side of the springs than on the other, which tends to return the bolster to central position."

It is clear that this compression of the springs 39, *more on one side than on the other,* enables the supporting links to "universally swing" within limits.

Again the specification says (p. 2, l. 71):

"The transoms (40) add stiffness to the truck frame laterally; * * * *They also serve as a guide for the bolster 24 to prevent its movement to any considerable extent in a direction longitudinal with the car body, and they further serve to transfer the draft of the propelling motors from the truck to the car body.*"

"By providing for the swinging of the bolster longitudinally with relation to the truck, the latter is permitted to start in advance of the car body and to thus impart its movement to the car body without abruptness owing to the action of springs 29, which being capable of varying their span and being supported by links yieldingly suspended, will neutralize in a measure sudden shocks imparted to the truck." (P. 2, l. 85.)

Referring to Figs. 4, 5 and 6 of the Uebelacker-Peckham patent, it will be noted that the ends of the links are supported upon transversely disposed pins 56 (see Fig. 5) "around which links 54, and with them lower links 53 and yokes 52, are adapted to swing (bodily about pivots 56),

thus providing for changes in the spans of the (half-elliptic) *springs 29 produced by varying loads and for the swinging of said springs and the car-body-supporting bolster resting* thereon LONGITUDINALLY AS WELL AS LATERALLY WITH RELATION TO THE TRUCK FRAMES." (P. 2, l. 125.)

It is apparent that Uebelacker desired *intentionally* to provide not only *transverse* swing of the links, semi-elliptic springs and bolster, but a *considerable and well-defined longitudinal* and *diagonal* swing as well. In the case of the structure shown in his Figs. 1 to 3, the *longitudinal* and *diagonal* swing is provided for by a compression of one side of the spiral springs 39 or a tilting action of the spring caps 37 thereon, while in Fig. 5 these parts swing bodily from a well-defined pivot 56. Clearly Uebelacker intended both forms of suspension, so far as the longitudinal swing is concerned—to be the equivalent for each other.

The above consideration, based upon the patent under which appellee justifies, must, we submit, be conclusive on the question of identity of construction of appellants' and appellee's trucks, their mode of operation and the results intended to be had.

We *submit* therefore that:

1. The Interference proceedings, and the position taken by the Peckham Co. therein, are persuasive (almost to the point of estoppel) that the prior art here set up does not affect the validity of the patents in suit.

2. A comparison of the Uebelacker patent with the patents in suit conclusively settles all questions of infringement in favor of the appellants.

The following, many of which are believed to be the leading cases, are placed together for convenience.

CASES ON PATENTABLE INVENTION.

Keystone Manfg. Co. v. *Adams,* 151 U. S. 139.

"Where the patented invention consists of an improvement of machines previously existing, it is not

always easy to point out what it is that distinguishes a new and successful machine from an old and ineffectual one. But when in a class of machines so widely used as those in question, it is made to appear that at last, after repeated and futile attempts, a machine has been contrived which accomplishes the result desired, and when the *Patent Office has granted a patent to the successful inventor, the courts should not be ready to adopt a narrow or astute construction, fatal to the grant.*"

Many later decisions of the Supreme Court hold that the question of invention must be determined not by the alleged obviousness of an invention, *after the event,* but by examining the history of the invention and the antecedent attempts of preceding inventors. The *historical* method has now superseded the *conjectural* method, and the courts thoroughly recognize that cases are not to be decided by *arguments* of an appellee's expert that the invention is now "*obvious*" to *him,* and "might have been made by any skilled mechanic," etc., but by ascertaining whether the invention would not have been made by other mechanics before the patentee if it really had *then* been "obvious."

Potts v. *Creager,* 155 U. S. 597, 608:

"And this is not the less true *if, after the thing has been done,* it appears to the *ordinary mind so simple* as to excite wonder that it was not thought of before. The apparent simplicity of a new device often leads an *inexperienced person* to think that it would have occurred to anyone familiar with the subject; but the decisive answer is that *with dozens and perhaps hundreds of others laboring in the same field, it had never occurred to anyone before.* The practiced eye of an ordinary mechanic may be safely trusted to see what ought to be apparent to everyone."

That the apparent simplicity or *obviousness* of an invention is no ground for invalidating a patent on the ground of an absence of invention. (See *Topliff* v. *Topliff,* 145 U. S. 156, 163.) That is a *carriage spring* case, and the attention of the court is especially asked to it.

To the same effect see:

Dubois v. *Kirk,* 158 U. S. 58, 63.
Krementz v. *Cottle Co.* 148 U. S. 556, 559.
Loom Co. v. *Higgins,* 105 U. S. 580, 591.

In *Consolidated Safety-Valve Company* v. *Crosby Steam Gauge and Valve Company,* 113 U. S. 157, *Blatchford,* C. J., said:

"* * * *Taught by Richardson,* and by the use of his apparatus, it *is not difficult for skilled mechanics* to take the prior structures and so arrange and use them as to produce more or less of the beneficial results first made known by Richardson; but, prior to 1866, though these old patents and their descriptions were accessible, no valve was made producing any such results."

Shipman, C. J., in *Brill* v. *Third Ave. R. Co.,* 103 Fed. Rep. 289, says, in a truck case:

"The testimony of the defendant's expert himself, as he goes through the history of the art, and thereby points out what the patentee's combination *did,* as compared with previous *efforts* to do something, shows that the *patented improvement was patentable.*"

In *Gindorff* v. *Deering,* 81 Fed. Rep. 952, 953, Judge Grosscup said:

"If this chuck were obvious to mere mechanical skill, why had not such skill, already called upon, supplied the need before? I fear that, under these circumstances, *were I to hold it mere mechanical adaptation, I would be considering myself a wiser and better mechanic* than those who for years had overlooked this method of accomplishing a desired result."

McKay & Copeland Lasting Machine Co. v. *Dizer,* 61 Fed. Rep. 102:

"The simplicity of the device, and *its apparent obviousness after the event,* ought not to detract from its meritoriousness. That is had never been suggested or thought of before, and effectually supplied the one thing

necessary to bring *success, when before there had been nothing but failure,* is sufficient to entitle it to rank as a new and useful improvement in the mechanic arts within the meaning of the patent law."

In *George Frost Co.* v. *Cohn,* 112 Fed. Rep. 1009, Coxe, J., in sustaining the patent, said:

"It is this *capacity for accomplishing results,* this *faculty of seeing what others fail to see* and hearing what others fail to hear which has always distinguished success from failure and the *inventor* from the *mechanic.* 'In the law of patents it is the last step that wins,' says the Supreme Court. This is the step which Gorton took."

In *Idle* v. *Trorlicht, etc., Co.,* 115 Fed. Rep. 137, Sanborn, C. J., said:

"It marked a perceptible *advance in the art* to which it relates, and the presumption which the patent raises, the failure of manufacturers and of mechanics skilled in the art for so many years to reach the object which it attained, its obvious utility, its simplicity, and the cleverness of its conception, persuasively urge to the result that to him who devised it the title of inventor ought not to be denied, and such is the conclusion of this court.

"While this improvement is by no means a primary invention, it scores one of those intermediate steps in the gradual progress of a useful art towards perfection, which are evidenced by the great majority of patented inventions, and it falls within the established rules that *a new combination of old elements, by which an old result is obtained in a more economical and efficient way, may be protected by a patent.*"

Mr. Justice Brown said in *The Barbed Wire Patents,* 143 U. S. 275:

"In the law of patents it is the last step that wins."

Heath Cycle Co. v. *Hay*, 67 Fed. Rep. 246:

"It is, of course, simple, *after the thing has been done*, and after *complainant's patent has shown how it can be done*, to make the necessary changes in the English patent and in the chocker model, and to combine the same with the other elements of complainant's combination so as to produce the same result in the same way as complainant does."

In *Johnson* v. *Forty-Second Street Ry. Co.*, 33 Fed. Rep. 501, Coxe, J., said:

"The test to which this patent has been subjected—the test which is usually applied to all contested patents—is certainly severe, and is often misleading and deceptive. *The defendant assembles every similar device, description or suggestion in the particular art not only, but also in analogous and even remote arts. Everything* which has the *least bearing* upon the subject is brought in and arranged by a skillful expert in an order of evolution which resembles most closely the invention which is the subject of attack. Having thus reached a point where but a single step, perhaps, is necessary to success, and *knowing from the inventor exactly what that step is*, the expert is asked if the patent discloses invention, and, honestly, no doubt, answers in the negative. There is always the danger, unless care is taken to divest the mind of the idea added to the art by the inventor, that the invention will be viewed and condemned in the light of ascertained facts. With his description for a guide, it is an easy task to trace the steps from an aggregation to the invention."

The nature of the exercise of the inventive faculty in the truck patents in suit lies along the lines stated by Judge Blatchford in *Wooster* v. *Blake*, 8 Fed. Rep. 429:

"The invention consists primarily *in finding out what mechanical operation is necessary* to produce the practical result arrived at, and *when such operation is hit upon*, the mechanical work is easy. It is easy, when the mechanical operation is seen, to say that it was *obvious* that certain mechanical arrangements would ef-

fect it; but mechanical arrangements are tried and tried in vain to reach a practical result, because the mechanical operation which is to effect such result is not yet seen."

Bray v. *United States Net and Twine Co.*, 70 Fed. Rep. 1006:

"There is no hard and fast rule by which to adjudge invention. Each case must stand on its own facts, but where it appears that the *patented structure is at the head of the evolution in its particular art*, that it is a marked improvement on what preceded it, that it does better work and accomplishes more satisfactory results, the court should surely be predisposed in its favor."

Cahill v. *Brown*, 3 Bann, & A. 580, a much-cited case:

"Inventions patented here cannot be superseded by the mere introduction of a foreign patent or publication, though of prior date, unless the description or drawings contain and exhibit a substantial representation of the patented improvements, in such full, clear and exact terms as to enable any person skilled in the art or science to which it appertains, *without the necessity of resorting to experiments*, to make, construct and practice the invention as he would be enabled to do *from a prior patent* for the same invention."

The presence of invention is often shown, (and it is shown here) by the absence of any alleged rival inventors appearing to contest priority. If the device was so obvious, that it would occur to any skilled mechanic, as the appellee contends, it is strange that, in view of the demand for such a step,[1] only one person, Mr. G. M. Brill, should have had

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[1] *W. S. Adams* testified (p. 214):

"Q. 178. State whether or not, in 1895, truck builders and other parties interested were looking for a new type of truck to meet the then requirements of the trade, and were working eagerly on the problems presented.

"A. They were, and *it meant great financial gain* to any who could accomplish it."

inventive ability enough to think of it. If the solution of a problem by a number of persons at the same time is a circumstance tending to show the absence of invention (*Haslem* v. *Plate Glass Co.*, 68 Fed. Rep. 479; *Union Gas Engine Co.* v. *Doak*, 88 Fed. Rep. 86, 91), the converse of the proposition is equally true, that the absence of such claimants to the invention when made is a circumstance tending to show the presence of invention and to negative any argument that might be drawn from its simplicity. As the Supreme Court said, in *Potts* v. *Creager*, 155 U. S. 597, 607:

> "The practiced eye of an ordinary mechanic may be safely trusted to see what ought to be apparent to everyone."

Thomson-Houston Electric Co. v. *Winchester Ave. Ry. Co.*, 71 Fed. Rep. 192:

> "No one can read this record without being impressed by the fact that Van de Poele *was more than a skilled mechanic in the art of electrical railway propulsion.* The Patent Office has raised a presumption in his favor as an inventor by the grant of numerous patents to him. Some thirty have been introduced by defendant, several of which cover highly meritorious inventions, which have *largely contributed to the successful practical operation* of the trolley roads throughout this country."

This is Mr. Brill's case exactly. Mr. Akarman testifies (p. 81, Q. 36) that the present high speed electric service "could not be carried on without the truck being developed to its present state." Also *Mr. Harrington* says: "The development of the last three or four years brought about by the result of the inventions contained" in the truck in controversy. See other like evidence, *supra*, p. 9, 23.

Kirchberger v. *American Acetylene Burner Co.*, 124 Fed. Rep. 764, 777:

> "When a patented process or *machine proves a failure*, is inoperative and another follows, and is a *success* in its operation, the *latter is a new invention and patentable*, even though we have the same ma-

chinery or parts of machinery, but they are combined or put together in a new way; and this is true even if the latter combination closely follows and resembles the first, *provided there be a difference.* In such case it is evident that the latter patentee has succeeded where the other failed; that he has discovered or invented the desired thing to accomplish a new and a useful result; that his change, however, unimportant it may seem to the observer, is the key to the whole situation. In such case the defense of anticipation, of prior use, or prior invention is not made out."

AUTHORITIES ON "TAKING THE MARKET."

In considering this subject, it should be noted that it is not only the Brill truck which has "taken the market," but the (identical) Peckham Company's truck, and that as soon as that company began to infringe, it sold no other truck (for that class of work). *W. G. Price,* formerly in its employ, testified (Rec., p. 481, Q. 24):

"In 1899 * * * 14 and 14-B were sold for city service. When we began manufacturing the 14-B-3 truck, the sales on Nos. 14 and 14-B entirely stopped."

See also, *supra* p. 28.

Evidence that a patented device has "taken the market" is particularly persuasive in the present case. There are but few street car truck builders in the United States—not more than four or five. They build trucks only upon specific orders from the railway companies. Their customers are comparatively few. Each customer, when about to equip a street railway, necessarily makes a careful and thorough investigation of the merits of the different trucks in the market. He is an intelligent and usually a trained man, he is spending large sums and is making a choice which will affect his company, for profit or loss, for a long time to come. In fact his trucks are the most vital part of his equipment. His requirements are severe; his judgment is cautiously and deliberately exercised. To take *that* market is to gain the verdict of a jury of experts. And when all the world buys, *to the exclusion, practically, of all else,* and his chief competitor sells,

practically, nothing else, the force of the evidence becomes irresistible.

We cite the following cases:

Stahl v. *Williams*, 64 Fed. Rep. 121:

> "It is claimed that the number of incubators containing this heater is greater than that of all the other makes combined. I am inclined to give greater weight to the evidence of utility, because it is not open to the objection suggested in *Duer* v. *Lock Co.*, 149 U. S. 216, 223. The class of persons who use incubators are not likely to be induced to buy by reason of an alluring trade mark, attractive finish or the energy of the traveling salesman. The rival incubators are operated side by side at the country fair, and the practical farmer may count the eggs and hatching chickens, and reduce the question of comparative utility to a mere mathematical exercise."

Smith v. *Goodyear Dental Vul. Co.*, 93 U. S. 495, per Strong, J.:

> "Undoubtedly, the *results* or *consequences* of a process or manufacture may in some cases be regarded as of importance when the inquiry is, whether the process or manufacture exhibits invention, thought and ingenuity. Webster, of the subject matter of patents, page 30, says: 'The utility of the change, as ascertained by its consequences, is the *real practical test* of the sufficiency of an invention. * * * Where the utility is proved to exist in any degree, a *sufficiency of invention* to support the patent must be presumed.' We do not say the single fact that a device has gone into general use, and has displaced other devices which had previously been employed for analogous uses, establishes in all cases that the latter device involves a patentable invention. *It may, however, always be considered;* and, when the other facts in the case leave the question in doubt, *it is sufficient to turn the scale.*"

Washburn & Moen Co. v. *Grinnell Co.*, 24 Fed. Rep. 23, per Brewer, J.:

"Great utility * * * is fair matter for consideration in determining * * * the fact of patentability."

Keystone Co. v. *Adams*, 151 U. S. 139:

"While it is true that the mere fact that a device has gone into general use, and has displaced other devices which had previously been employed for analogous uses, does not establish, in all cases, that the latter device involves invention within the meaning of the patent laws, yet such fact is always of importance, and is entitled to weight when the question is whether the machine exhibits patentable invention. (*Smith v. Goodyear*, 93 U. S. 486, 495.)"

In view of the extensive use of the invention covered by the patent in suit, in *Topliff* v. *Topliff*, 145 U. S. 156, Brown, J., said:

"While the question of patentable novelty in this device is by no means free from doubt, we are inclined, in view of the *extensive use* to which the springs have been put by *manufacturers* of wagons to resolve that doubt in favor of the patentees and sustain the patent."

It was in evidence in *The Barbed Wire Patent*, 143 U. S. 275, that the patented fence did not differ radically from other fences that were old, but it was apparent also that the improvement covered by the patent in suit made the barbed wire fence *a practical and commercial success.* It was also shown that the *sales were very large*, and that the device immediately met with favor. Mr. Justice Brown said:

"Under such circumstances courts have not been reluctant to sustain a patent to a man who has taken the final step which has turned a failure into a success."

Star Brass Works v. *General Electric Co.*, 111 Fed. Rep. 398, (Day, C. J.):

"Where, in the device of a patent, the departure from former means is small, yet the change is important, the doubt as to whether the inventive faculty has been exercised is to be weighed in view of the fact that the device in question *has displaced others* which

had previously been employed for analogous uses, and this may decide the issue in favor of invention, especially where other inventors, of experience and skill in the art, *had unsuccessfully attempted* to solve the problem presented."

National Hollow Brake Beam Co. v. *Interchangeable Brake Beam Co.*, 106 Fed. Rep. 693 (C. C. of A., Sanborn, C. J.), was on a patent on a brake beam. It was there said:

"The problem was grave and difficult, and to him who successfully solved it honor and reward were justly due. Many men interested in railway equipment worked and searched for the solution, and among them the patentee, Phillip Hein. * * *

"These facts establish neither the novelty nor the patentability of his device, but they certainly challenge admiration, and demand that the presumption of validity which supports his patents *shall not be stricken down without careful consideration* and *cogent and convincing proof.*"

"All the mechanical elements with which he worked were well known, and his device is only a new combination of old elements, but * * * *it met the demand of the hour,* and by a new mode of operation, *accomplished the desired result* more efficiently and satisfactorily than it had ever been reached before."

The case at bar falls easily within the ruling of this Court in its most recent case on the subject—*In re Thomson,* 26 App. D. C. 419, relating to car lighting. Both cases relate to devices used in the railroad business. Both classes of articles have a *critical and discriminating market,* confined solely to railway companies. Both classes of inventions are very profitable if they are really successful. In rendering the opinion of the Court, the Chief Justice said:

"In view of these considerations, the testimony going to show the practical success of the applicant's combination, the truth of which is substantially conceded, is entitled to material weight. Owing to the very serious difficulties which appear to have been successfully overcome by the applicant, *other electrical train-light-*

ing systems have not gone into general use. The demand for an improved system has been an urgent one for years, and yet no other inventor, or electrical expert, *with all the knowledge afforded by prior patents* and constructions, has succeeded in devising a system *answering this demand.* * * *

"Entertaining such a doubt in this case, we think it just, and in accordance with precedent, that the apparatus of great utility ought to resolve that doubt in favor of his claim. *Cleveland Foundry Co.* v. *Kauffman*, 68 C. C. A. 658, 135 Fed. 360, 362."

Where there is an actual and *admitted improvement* or combination of old elements in which *utility is shown in a marked degree*, there should be controlling reasons to rebut the presumption that there is a sufficiency of invention to support a patent. *Imperial Bottle Co.* v. *Crown Cork, &c., Co.*, 139 Fed. 312. (C. C. A., 4th Circuit).

There is a different class of cases where, for various and special reasons, this rule does not apply, thus:

In *Goodyear Tire and Rubber Co.* v. *Rubber Tire Wheel Co.*, 116 Fed. Rep. 363, it appeared that the success of the patented tire was attributable "to the power of great capital in buying or crushing out rivals, and to great business push and advertising."

In *McClain* v. *Ortmaier*, 141 U. S. 419, the success of the patented horse collar sweat pad was held to be due, partly at least, to the fact that the owner was the only one who made the business a specialty, and that he made the articles of a superior quality and advertised them extensively.

In *Globe-Wernicke Co.* v. *Fred Macey Co.*, 119 Fed. Rep. 696, the extensive sales were due to fine workmanship and business energy.

CASES ON INFRINGEMENT.

Union Steam Pump Co. v. *Battle Creek Steam Pump Co.*, 104 Fed. Rep. 337:

"The claims of a patent, unless they are restricted in terms or by necessary implication, will include all

changes of form, whether of size or shape, or *changes in location* of the parts of a combination, *if the mode of operation is not changed,* and the parts *still perform the same duty.*"

Adams v. *Folger,* 120 Fed. Rep. 260:

"While a patent for a combination is not infringed if any one of the elements of the combination is omitted, a change in the form or the *location* or sequence of the elements will not avoid infringement where they are all employed to perform the same functions, unless form, location, or sequence is essential to the result or to the novelty of the claim."

McSherry Mfg. Co. v. *Dowagiac Mfg. Co.,* 101 Fed. Rep. 716 (C. C. of A., Sixth Circuit):

"A patentee, although not a pioneer inventor, but an improver only, is entitled to a reasonable range of equivalents, measured by the advance he has made over older machines, and is not limited to the specific form claimed and described, unless he has expressly so limited himself, or unless such limitation is necessary in order to save his patent from anticipation."

Thomson-Houston Electric Co. v. *Lorain Steel Co.,* 103 Fed. Rep. 641, was a case of an electric motor regulator in which a subsequent inventor adopted the principle of the invention and improved the device in detail, as in the case at bar. The court said:

"In this case it cannot be found that each detail of the locking mechanism of Harris is an equivalent of each detail of the locking mechanism of Knight; and if that is a necessity, the patent in suit would be worthless, because *after the practical electrician had been told to lock,* a large variety of locking mechanism was open to him from which to make a choice of minor details. It is, however, true that *'the main operative features of both machines are the same.'* (*Machine Co.* v. *Lancaster,* 129 U. S. 263.)"

Adams Co. v. *Schreiber, etc., Co.*, 111 Fed. Rep. 182:

"A mere change in the form of an element or part of a patented device, where it performs the same function in substantially the same manner, does not avoid infringement."

Severy Process Co. v. *Harper*, 113 Fed. Rep. 581:

"When the question of infringement depends upon the construction of the claims, the court, in the endeavor to *find out what it is* that the inventor has given to the world, is justified in *considering the invention as measured by the success achieved*, and where the alleged infringer has taken the *'last step,'* and has attained the first commercially successful solution of the problem, *care should be taken to protect him* to the extent of his actual invention."

COMITY.

THE NORTH JERSEY CASE IN THE CIRCUIT COURT OF APPEALS (3d Circuit) AND ITS VALUE HERE.

The doctrine of Comity and its limitations—as to how far this court is to be bound, or in any way influenced, by the judgment in that case, will be found in *Mast, Foos & Co.* v. *Stover Mfg. Co.*, 177 U. S. 488. This court is certainly not *bound* by that decision. The Court, by Mr. Justice Brown, there said:

> "Comity persuades, but it does not command. It declares *not how a case shall be* decided, but how it *may be*, with propriety, decided. It recognizes the fact that the primary duty of every court is to dispose of cases according to the law and the facts; in a word, to decide them *right*. In doing so, the judge *is bound to determine them according to his own convictions. If he be clear in those convictions*, he should follow them."

It is obvious that in order to place a proper value upon the judgment and opinion of the Circuit Court of Appeals

in the North Jersey case, this court must fully hear and understand the case at bar. If the court is then *"clear in its convictions,"* it will follow them; if it be in doubt, then, and not till then, as the opinion in the Mast, Foos case holds, "comity comes in and *suggests* uniformity of ruling to avoid confusion, till a higher court has settled the law. It *demands* of no one that he shall abdicate his individual judgment, but only that *deference* shall be paid to other co-ordinate tribunals."

In *Welsbach Light Co.* v. *Cosmopolitan Incand. Light Co.*, 100 Fed. Rep. 648, it was *held* that in the Seventh Circuit the rule is that the Circuit Court "determines each case on its merits, giving weight to the decisions of other courts only to the extent that their reasoning may be persuasive." That Courts there refused to follow a decision of the Court of Appeals for the Second Circuit adjudicating upon the same patent.

In *Imperial Bottle Co.* v. *Crown Cork, &c., Co.*, 139 Fed. 312 (C. C. A., 4th Circuit) the patent had been held invalid in the Court of Appeals of the Second Circuit. The Court, after expressing its high respect for the ability of that Court, and the desirability of avoiding conflicting decisions, held:

> "But the parties before us have the right to our individual judgment, and considerations of convenience, and expediency must give way to considerations of duty from which we cannot be absolved by the doctrine of Comity."

In *Voightmann* v. *Weis &c., Co.*, 133 Fed. 299, the Court speaks of "The rule, or rather the sentiment, of Comity."

This Court, in considering the opinion on appeal in the North Jersey case, will no doubt give due weight to Judge Bradford's able opinion in the Court below sustaining the validity of both the patents in suit. The case was argued before him at great length for four days and by five counsel. His opinion is reported in 124 Fed. Rep. 778.

Secondly, the Supreme Court held in the Mast, Foos Case:

> "Clearly it [the doctrine of comity] applies only to questions which have been actually decided and *which arose under the same facts.*"

We shall now show:

1. That this record differs in many essential respects from the record which was before the Court of Appeals for the Third Circuit, in the North Jersey case.

2. That the opinion in that case contained erroneous findings of fact, and showed a misapprehension of the mechanics of the case, as well as error in the application of the law.

THE DIFFERENCES BETWEEN THE RECORD HERE AND THAT IN THE COURT OF APPEALS FOR THE THIRD CIRCUIT.

(a) The Appellants' additional evidence here.

The present record contains much undisputed evidence for the appellants that was not before the Court of Appeals, establishing the fact that the truck here in suit marks an epoch in the electric truck art, and is the highest development therein up to the present time; that it is the standard truck in the art for high-speed city and suburban traffic. This evidence, under the authorities, is of great importance and in many cases has been considered as of controlling weight.

Again, in this case Mr. Uebelacker, the patentee of the patent under which the appellee justifies, testifies that, by order of the Peckham Company, he inspected some of the earliest Brill trucks of the kind here in suit, made drawings of them and built trucks of the same construction; and that that company procured him to file an application (assigned to it before issue) for letters patent claiming the *broad features* of construction of the Brill trucks which he had thus inspected—facts which convict the Peckham Company of deliberate piracy. This evidence was not in the North Jersey case.

(b) The Appellee's case here also differs essentially.

In this case the same prior patents are set up as in the other case, together with some additional patents not found there, but the rest of the evidence is *essentially different*. A different expert witness testifies here on behalf of the appellee and presents an entirely different point of view of the various prior art patents set up.

A most vital difference arising out of this change of expert witnesses is in respect of the Thyng truck, which, in the North Jersey case, was the prior art structure, most seriously urged by counsel and by the expert in that case. The experts' evidence in that case rested entirely upon the Thyng truck structure with the suggested *substitution* therein of the Haskins or Brill & Curwen spring links, which, they testified, required nothing more than mechanical skill or judgment. The opinion of the Court of Appeals for the Third Circuit, was based upon and followed that theory (but did not mention Haskins). But neither of the expert witnesses in that case have testified here.

In the North Jersey case the expert witness, Fowler, testified at great length on the mechanical differences between the complainants' and defendant's trucks to show non-infringement. No such evidence is presented here. Infringement is not here denied, if the claims in suit are to be construed as they read. Mr. Freeman's evidence, at p. 204 of Rec. middle of page, is clear authority for this statement. In the North Jersey case infringement was contested at every point. The specious but erroneous differentiations of the expert in the North Jersey case (Mr. Abbott) were much relied upon by the Court and led it to what we believe to be erroneous conclusions. Mr. Abbott was not called as a witness in this case.

Other important differences will be developed in the following pages of this argument.

THE OPINION OF THE COURT OF APPEALS.

We submit, with great deference, that the opinion of the Court of Appeals for the Third Circuit contains many erroneous findings of facts and is based upon an entire misapprehension of the mechanical issues involved in the cause; also that it overlooked or misapplied the legal doctrines which were properly applicable thereto.

(a) It Misunderstood the Thyng Truck.

The opinion makes the *fundamental error* of finding that the semi-elliptic springs of the Thyng truck "are suspended from the side frames by *universally moving links.*" To this we say:

1. That this statement is a demonstrable error, as shown by an inspection of the Thyng patent drawing and specification.

2. That there is ample and undisputed evidence here of trained truck experts that the Thyng truck does *not* have universally moving links.

3. That that opinion bases this erroneous finding upon the evidence of Phillips Abbott, defendant's expert witness there, *who is not a witness in this case.*

4. That appellee's record here contains no evidence that such is the fact.

5. That the quotation in the opinion of the Court of Appeals from complainants' expert, Mr. Livermore, upon which is partially based this finding, was an erroneous interpretation of his language as there quoted, and, besides,

6. That the words quoted from his evidence in the opinion of the Court in that case are not found in this Record.

We will take up these points:

The opinon states (referring to the Thyng truck):

> "The semi-elliptic springs are suspended from the side frames by *universally moving links.*"

But an inspection of the Thyng patent shows that this is a mistaken view of the Thyng structure, and that the Thyng links clearly have only *transverse* motion. This appears in Fig. 3 of the Thyng drawings and in several passages of the Thyng specification. Thus:

"The nature of my invention consists in supporting the car body on a flexible or equalizing bolster, and suspending and governing the *lateral* motion of the same by shackles."

"This allows the *bolster* to move *endwise* and the car body to move *laterally* independent of the truck."

"The *bolster* is allowed to move *endwise* freely between two girts in the truck frame; this motion which gives the car body its *lateral* motion, etc."

"What I claim * * * is the mode herein described of hanging the car body and governing its *lateral* motion, etc."

This erroneous statement is the *most fundamental* part of Judge Acheson's description of the Thyng truck; he follows it by saying:

"The foregoing description which we extract from the *testimony of Mr. Abbott,* the defendant's expert * * * ."

But *Mr. Abbott did not testify in this case* and there is *no evidence here* such as he gave there.

Longitudinal motion of the links in the direction of the length of the car cannot, as intimated in the opinion of that Court, be secured by reason of the space between the bolster and the transom. This space is shown in the drawing, Fig. 1, of the Thyng patent to be minute, probably less than a quarter of an inch. It is simply large enough to allow the easy vertical play of the bolster between the transoms.

The opinion then proceeds to quote the language of the *complainant's* expert as confirmatory of its finding that "the Thyng patent discloses every feature of the principal combination of the patents in suit, with the single exception that the links are not extensible or, in other words, do not embody a spring."

The language quoted from Mr. Livermore in the opinion is as follows:

"The first is the Thyng patent, No. 5275, dated November 18, 1845. My comparison of the structure shown in this patent with the Brill truck has before been fully given. It does not disclose a car truck embodying

> the combination of a truck frame having side frames, a bolster, longitudinally arranged semi-elliptic springs supporting the ends of the bolster, the elastic links or elastic or extensible suspensions of any kind connecting the ends of the semi-elliptic springs with the side frames. *It does, however, embody a combination including all of the above-named elements except the elastic and extensible links, and it has non-elastic links jointed for transverse swinging out to connect the ends of the semi-elliptic springs with the side frames.*"

This clearly does not sustain the above finding of the Court of Appeals. The meaning of this last sentence (the part italicized) is obviously that the Thyng truck differs from the Brill truck in suit in *two* respects, that is: in *not having* "elastic and extensible links" and in *having* links which have capacity for "*transverse* swinging" only.

Mr. Livermore's sentence is badly constructed, but his meaning is clear. He states *two* points of difference between the Thyng and Brill structures, and not *one*, as erroneously inferred in the opinion of the Court of Appeals.

Here, then, was a *fundamental* finding—the most important, mechanically speaking, in the case—based upon Mr. Abbott, who is not a witness here, and upon a clear misconception of Mr. Livermore's evidence, *which evidence is not in this case.*

The opinion, then, of the Court of Appeals, starting with a fundamental and vital misapprehension of the Thyng truck, assumed that as a basis, and looked to other prior art patents for a spring link to substitute therein. It proceeded to find suitable spring links in the Longstreth and the Hefferman locomotive patents, in the Graham patent, in Brill & Curwen, and in the Peckham patents No. 464,253 and No. 563,685 (the latter of which was issued long after the invention of the truck in suit), and held that Mr. Brill merely substituted, in the Thyng truck, an old form of link, and that this substitution did not involve invention.

But our answer to all this is, we submit, complete. Who has shown how this substitution can be made? Let anyone who will, take these six patents, one by one, and see if he can substitute any of their "spring" links in the Thyng truck. No one has ever done it. No one has pointed out to this Court, or any other Court, how it can be done. Words are

not enough; *suggestions* are not enough. The result must be a practicable *truck,* and it must be *mechanically correct* enough to carry enormous weights on irregular tracks at fifty miles an hour.

Is it not a complete answer to all this to say that the man who could make this substitute is within the protection of the patent law? Even if that is all Mr. Brill did, is it not enough? Even if that is all he did, has he not produced a truck that has marked an "epoch" in a great art and has superseded all other trucks? Who, then, shall be protected by the patent laws, if he shall not?

Perhaps the appellee's counsel will at bar explain how these substitutions can be made, or will aid the Court in doing it, but we hardly think the Court will perceive a modern electric truck in the two models they have produced; and as to most of their substituting patents they have not even made an attempt to show it. The models they have produced refute themselves.

Again, what was there in 1895 to show anyone that this substitution was *desirable?* As Judge Blatchford said in *Wooster* v. *Blake,* 8 Fed. Rep. 429:

> "The invention consists primarily in *finding out what mechanical operation is necessary* to produce the practical result arrived at, and when such operation is hit upon the mechanical work is easy."

Furthermore, the argument of "*obviousness*" is entirely contrary to the settled rule laid down in *Topliff* v. *Topliff,* 145 U. S. 156, and in all the other leading cases cited above in this brief.

Judge Bradford probably understood these patents better than any other Judge who has ever considered them. The same argument of "substitution" was urged for two days before him—on the same patents to Thyng, Haskins and Brill & Curwen. His reply was:

> "The prior art is also relied on by the defendant to negative patentability in the invention described and claimed, and many patents and other exhibits have been produced in evidence in support of its contention. There can be no doubt that in a broad sense all the elements entering into the combination of claim 13 were old and well known. At the time the invention embodied in

that claim was conceived there was, generally speaking, nothing patentable in such spring links, semi-elliptic springs, or other elements, separately considered, as entered into the combination claimed. But the several elements, though old, *were so adjusted and combined in the mechanism covered by the claim as to co-operate in producing a joint result which could not be obtained from a mere aggregation or assemblage of the different elements.* By way of illustration, the spiral springs in the supporting links and the semi-elliptic springs *are so associated that the action of the former is modified* by that of the latter, and, conversely, the action of the latter by that of the former."

Mr. Livermore agrees with this view. He testifies (Rec. p. 504) as follows:

"The foregoing elements make a *unitary* structure or structural *combination,* every feature of construction and arrangement of which is essential for the proper coaction of all the parts to attain the results that the truck is intended to produce.

"By this construction and arrangement the springs of the system, and especially the semi-elliptic springs, combined with the spiral springs of the spring links by which the semi-elliptics are suspended from the side frame, not only contribute to the easy riding of the car body by absorbing the shocks that would otherwise be transmitted from the wheels of the car body, but they serve very efficiently to relieve the truck structure of internal strains that are incident to various of the constructions of the prior art, and *by their conjoint action* accomplish *more than the sum* of their individual actions or effects, which might be obtained if the same elements were incorporated in other arrangements in a truck structure."

But, as we have pointed out, four of the very patents in which the Court of Appeals found spring links that it thought could be substituted in the Thyng truck, have never been seriously urged by appellee's counsel and were not even set up in the New York case before Judge Lacombe, though they had been in the North Jersey record (but were not seriously urged at the hearing of that case).

These were Longstreth, Heffernan, Graham and the Peckham 1891 patent.

This "opens" these four patents "to suspicion." Mr. Justice Brown said in *Mast, Foos & Co.* v. *Stover Mfg. Co.*, 177 U. S. 489:

> "The fact that such anticipating devices were not called to the attention of the prior court is likely to open them to suspicion."

Obviously, like "suspicion" must attach to all patents set up in the North Jersey case and afterwards intentionally omitted from the New York case.

We have shown above that this "suspicion" attaches to many of the other patents relied upon by the defendant (*supra*, p. 43, and *infra*, p.)

We will diverge for a moment to consider

The doctrine of substitution in the patent law and its inapplicability here.

The doctrine of *substitution*, in the patent law, means that merely to substitute one old and well-known material for another, or one old mechanical and equivalent element for another, where no new function of the elements relative to each other is present, or where no new result is achieved by the substitution, may not constitute patentable invention. Wherever "substitution" is set up, it must be shown that the machine, etc., in which the element is substituted, *required no particular change or alteration* to fit the substituted element to its new environment. Where an old element is taken and incorporated into an old machine or device and there combined in a new way so as to produce a new combination of elements, and there perform functions and produce results which the element in its old environment did not do, the technical defense of "substitution" does not apply. The only defense which can be urged against the latter condition is that the combination in and of itself is not patentably novel.

The lack of applicability of the substitution doctrine to the case at bar may be illustrated as follows:

If one should take the non-resilient and non-universally swinging shackles from the Thyng truck and substitute

therefor another form of shackles, differently arranged, but which has no spring or universally swinging features, the latter form being well known in the art, the mere substitution of this latter old and well-known and equivalent form of shackle for the shackle in the Thyng truck may not involve the exercise of the inventive faculty, for the reason that no new function or mode of operation or result would thereby be incorporated into the structure of the Thyng truck. Likewise, the substitution of a glass or porcelain knob on a door in place of one made of wood or metal has been held to constitute unpatentable substitution. Likewise, the substitution of one old form of printing roller for another old form of printing roller in a printing machine has been held to constitute unpatentable substitution.

But the semi-elliptic spring suspension of the Brill truck differs from that of the Thyng patent in the essential aspects of universal swing and spring support; the incorporation of a *freely swinging spring* link into the Thyng truck in place of the non-resilient and substantially inflexible (except in one direction) shackles of the Thyng patent is not the substitution of one *equivalent* element for another. The substituted element would be *new* to the old organization, would have new functions in its new environment and would produce new results *not contemplated* in the Thyng truck. While it might be stated that new combinations of elements sometimes involve the bringing together of old elements into a new environment, the test of the difference between what is known in the patent law as a patentable and novel combination of elements and the opposite doctrine of unpatentable substitution, resides in the novelty of combination and function and result. Where these three elements are present, the doctrine of substitution cannot be considered as applicable.

The cases cited in the opinion of the Circuit Court of Appeals on non-patentable substitutions are shown elsewhere to be inapplicable to this case.

The chief trouble with the appellee is that nowhere in the prior art patents do they show a *universally hung* spring link which is capable of removal from its old environment and of being incorporated into the Thyng truck *without modification or reorganization*.

(b) The Court of Appeals was mistaken in finding that the Electric Street Railway Truck Art was in a highly advanced state in 1895.

Its opinon states as follows:

> "Under the proofs it is very clear that the art of truck construction, whether relating to car trucks generally or to trucks employed in passenger service in *connection with electric propulsion,* was old and *in a highly advanced state* at the time Brill made these patented improvements."

But the facts here proven are directly *contrary* to that. The history of the art is so well known, has so grown up in the very streets of the cities where we live, that it is almost a matter of judicial cognizance. Every one remembers when electric cars began and when the long, double truck cars first appeared. Electric street railway propulsion came in about 1888, and had been but slightly developed by 1891. About 1892 or 1893 came the demand for *double-track* cars mounted on *pivotal* trucks. This record shows that the *first and only pivotal truck* that was then introduced to meet this demand and was largely used was the *Maximum Traction* truck. After its introduction, as the business grew, came the demand for *higher speed* and the use of *two motors* on *each* truck, which was impossible with the Maximum Traction trucks. In 1895, *when the art was still young,* Mr. Brill invented the truck in suit. The record showed, and this record shows (*both without dispute*), that these two trucks, the Maximum Traction truck and the truck of the patents in suit, are, practically, the ONLY *pivotal* trucks now or ever in general use for electric street railway purposes. Furthermore, the evidence shows in this case at bar, that the *steam railway truck art taught nothing* to the electric street railway art. The conditions were entirely different—arising out of the necessity for providing space for the motors and of using low-hung cars, with trucks capable of rounding sharp curves. None of these conditions existed in the steam railway art. The conditions there were entirely diverse. (See *supra,* p. 6, 13.)

All of these facts are entirely undisputed. (See *Akarman,* p. 420, Q. 5-16.)

(c) The opinion found erroneously that the date of conception of the Brill invention was not carried back of Brill and Curwen patent.

The learned Court, referring to this patent, said:

"The filing and issue dates of the Brill and Curwen patent show *prima facie* their priority over Brill, and we find no special evidence to rebut that final showing."

The Court in this quite overlooked the *undisputed proofs*. It is hard to understand how it came to do so. The conception of the invention here in suit was there shown to have been in December, 1895; the Brill and Curwen application was not filed till November 3, 1896. That patent was dated August 30, 1898. (See *supra*, p. 51.)

The only *relevant* date of the Brill & Curwen patent is the *date of issue*, August 30, 1898, nearly three years after the truck of the patent in suit was invented and long after it had gone into quite general use. We do not understand that it has ever been disputed that the *issue* date of a patent is the only date which is relevant evidence in this connection. Thus:

Bates v. *Coe*, U. S. 31, 33, *held*:

"Neither the defendant in an action at law nor a respondent in an equity suit can be permitted to prove that the invention described in the prior patent, or the invention described in the printed publication, was made prior to the date of such patent or printed publication, for the reason that the patent or publication *can only have the effect as evidence that is given to the same by the act of Congress.*"

Barnes Automatic Sprinkler Co. v. *Walworth Mfg. Co.*, 60 Fed. Rep. 605, *held* that if a patent is set up in an answer and is there "referred to simply by number and date, without averment of earlier invention and use, or of the date of the application upon which it was granted, evidence of those particulars would not be competent, because not within the issue." but that when the answer is framed to show "not a prior patent or publication, but that the grantee of the patent in suit was not, and that the patentee of a

patent of a later date, issued upon an earlier application, was the first inventor," evidence of the application date of the patent in question would be admissible. But this doctrine does not apply as the Brill & Curwen application was filed almost a year after Brill conceived his invention. The appellee has never contended otherwise.

In the present case these patents are merely set up in the answer in the usual way "by number and date," and there is no other or additional averment in the bill in respect of matters contained in these patents.

The case of *Westinghouse* v. *Chartiers Gas Co.*, 43 Fed. Rep. 582, 588, was a different case from *Bates* v. *Coe* and from the case at bar. There the court *held*: "That he (the person who had filed an earlier application) was prior to Verner is indisputable under the proofs before the court." Under those facts, which do not exist here, the application was held to be admissible in evidence.

See also *Howes* v. *McNeal*, 4 Fed. Rep. 431.

(d) The Peckham patent of 1896, considered in the opinion as part of the state of prior art, was erroneously so considered.

No consideration should have been given to the Peckham patent of July 7, 1896, No. 563,685. It was *too late;* these Brill trucks were built and put in use in California as early as *March*, 1896.

(e) The Court gave an erroneous effect to the language of the parent patent in suit in which reference is made to a pending application of Brill (the present patentee) and Curwen.

The opinion states:

> "But the admission of the disclaimer settles the question of priority in favor of Brill and Curwen. Patent No. 610,118 to Brill and Curwen must be taken as a part of the prior art."

This is erroneous, as we have pointed out, *supra*, p. 51. The "admission of the disclaimer" has nothing to do with the question of *priority of invention* as between the application for the patent in suit and the Brill and Curwen

application. An inventor having two inventions in the same art may seek patents on both at the same time, and that he does so has no bearing in the matter of priority of invention as between the subject matter of his two applications. He may (usualy he *must*) divide his inventions between his two applications and define the scope of each one by referring to the other, without making the other a part of the prior art. By doing so he merely *limits and defines the scope* of what he claims; he does not, by such reference, *create a prior art.*

This disclaimer has just the value given to it by its own words, which have been correctly interpreted by Judge Bradford, and no more. (See *supra,* p. 51.)

(f) The Court misapprehended the Brill & Curwen truck and its place in the art.

The opinion of the Court of Appeals quotes two claims from the Brill & Curwen patent and proceeds to find that the only difference between the combination therein claimed and the "principal combination of the claims involved in this suit is that the latter claims call for semi-elliptic springs for connecting the links instead of equalizing bars." It seems strange that the Court could not see that the Brill & Curwen truck is an entirely different type of truck from the truck in suit. Brill & Curwen has full elliptic springs *inside* of the wheel base, and located between a spring plank (an additional member of its structure not present in the truck in suit) and the bolster. The truck of the patents in suit has its half-elliptic springs *outside* the wheel gauge. To remove the rigid equalizing bar of the Brill & Curwen patent and substitute a half-elliptic spring would not give the truck of the patents in suit.

(g) That opinion misapprehended the construction and mode of operation of Appellee's spring links.

The opinion stated as follows:

"In consequence of this construction, the complainant's link has an unrestrained universal swing or movement, and also a *telescopic or lengthening or shortening* action by reason of its several parts sliding with

relation to each other. The *defendant's* link is not so constructed *nor has it such universal swing* or such *sliding* movement."

These are two extraordinary errors *in fact.*

In the defendant's truck the imposition of a load and the operation of the truck in service compresses the spiral springs which support the links and thereby extends or *lengthens* the defendant's links (mechanically speaking) precisely as is the case with the complainants' links. The defendant's links, viewed as a means of support of the ends of the half-elliptic springs upon the side frames *are, therefore, extensible.*

1. It is the *second* patent in suit, which the specific form of defendant's links infringes. The links of the second Brill patent are clearly *not* sliding or telescopic. They work precisely as the defendant's links, from a *mechanical* or operative point of view. The difference between them is solely in the point of location of the spiral springs. Claim 13 of the parent patent is generic as to the forms of links; the *specific form* of link is covered in this case by the claims of the *second* or divisional patent.

2. Besides, there is direct *evidence in this case to the contrary* of the statement made by the Court of Appeals as just quoted (that the appellee's link has "no such universal swing"); and the truck, too, speaks for itself. *Mr. Akarman* says (Rec., p. 430, XQ. 66):

"XQ. 66. Please look at 'Defendant's Exhibit, Peckham 14-B-3 Truck,' and state whether or not you find any provision tending to restrict longitudinal motion of the links."

"A. I do not see anything which restricts longitudinal motion." (See also his answers to XQ. 67 and 69.)

3. Again, in this connection, that opinion proceeds to say that the "longitudinal movement [of the defendant's link] is *resisted,* etc."

This, we submit, is mechanically erroneous. This longi-

tudinal swing is, it is true, *cushioned* against shocks, but *full capacity* for all *necessary* longitudinal movement is present. The resistance to longitudinal swing which is presented by the spiral springs of the defendant is precisely the same resistance as is found in the corresponding spiral springs of both *patents in suit*, more especially in the second Brill patent. (See Fig. 1 of No. 627,898, and Fig. 1 of 627,900.) It is part of the *method of operation* of both trucks. That the defendant fully *provides* for complete capacity for longitudinal swing (indeed universal swing) appears in Fig. 5 of the *Uebelacker* patent under which the *defendant justifies* (No. 635,986), and is elaborately set forth in the specification of that patent. (See p. 2, l. 85.)

These matters of mechanical structure are *fundamental*. If misunderstood by the Court of Appeals, it must affect the value of its opinion.

(h) The opinion was erroneous in its comparison of the spring links of the patents in suit with those of appellee's truck.

The opinion quite overlooks the *second* patent in suit. It states:

> "The link of the complainant's patent embodies the following features * * *
>
> "(2.) A spiral spring enclosing the rod *below the side bar*, and
>
> "(3.) A *stirrup or hanger*, the lower end of which is below the rod and there engages with the end of the semi-elliptic spring, the upper end of the stirrup passing inwardly so as to rest upon a cap which is placed above the spring."

These features are *not found* in the second or divisional patent in suit. It is *this divisional patent* which covers the *specific form* of spring link and of which the complainants there alleged infringement (as do the appellants here).

The comparison made in the opinion between the complainants' and defendant's links is quite wrong in stating that the complainants' link of the divisional patent has "a telescopic or lengthening or shortening action." Such is

not the case. There is absolutely no difference between the defendant's links and the links of the *second* patent, *as links*. The only difference is in the location of the spiral springs in the links which is not a mechanical difference. Both are extensible in the same way. That both have the capacity for universal swinging movement is equally true, as has been pointed out above.

Again, at the close of the opinion it is said: "We hold, therefore, that the defendant's links do not infringe the *claim* in question."

It would seem that the claim in the mind of the Court was claim 13 of the *parent* patent, that being the last claim previously referred to in the opinion. The comparison should have been between the defendant's links and the *claims* of the *second or divisional patent.*

(i) That opinion was mistaken in its statement that Brill's only advance over Thyng lay in the extensible or elastic links.

That Court took a clearly mistaken view in the following statement:

> "It appears then that the only advance made by Brill on Thyng was to substitute for the latter's non-elastic links for supporting the semi-elliptic springs extensible or elastic links."

On the contrary, the gist of the invention and the advance over any earlier device and the very thing that has *made* this truck a *success*, lay in the support of the half-elliptic springs by a *resilient* "suspension" having movement both *longitudinally, transversely* and *diagonally*.

(j) The opinion misapprehended the Heffernan patent; also the Longstreth, Graham, and Brill & Curwen patents.

The opinion makes the following statement:

> "The Heffernan patent No. 412,256, dated October 8, 1889, shows the combination of a truck frame, spring link depending from the truck frame, semi-elliptic springs connecting the links and means for connecting the latter springs with the car body."

Now, if by this it be intended to state that Heffernan shows the elements of claim 13, we submit that this is an error. Claim 13 includes links which have *longitudinal, transverse* and *diagonal* (that is, *universal*) *movement*. But this is not disclosed by Heffernan, and Heffernan shows no "means for connecting the semi-elliptic springs with a car body."

In Heffernan, the half-elliptic springs have no *transverse* swing, and practically no longitudinal swing. They work only *vertically* in sustaining the locomotive boiler and frame.

The same thing is true of the Longstreth patent and also of the Graham patent, in which latter the semi-elliptic spring does not swing and the links themselves have no capacity for *transverse* motion.

Furthermore, in Graham the links do not sustain the half-elliptic springs. They rest on the *axle boxes*. The weight of the truck frame and car body is taken on the spiral springs in the first instance. They are merely a form of *axle box* springs.

The Brill & Curwen patent certainly does not show the *longitudinal* or *diagonal* (that is *universal*) movement of the links, which is essentially a part of the patent in suit and is covered by claim 13.

(k) That opinion took an erroneous view of the Peckham 1891 patent.

The Peckham patent of 1891, referred to in the opinion of the Court, does not show an *extensible* spring link or a *swing link*. The device referred to by that Court is evidently the left-hand figure of figure 3 of that patent (464,-253).

1. This structure cannot be said to be *spring-supported* in any sense relevant to this issue, because the only thing approximating a spring is the rubber part marked *t*, which is a mere pad of rubber used for deadening shocks, and which is tightly clamped above and below by the set screws *nn* and the washers *oo*. Clearly in this respect it has no approximation to the patent in suit.

2. It is not a *swinging* link, because the above-men-

tioned clamps *nn* and *oo* would prevent any swing, and furthermore the space around the rod or eye bolt *j* is filed with a rubber tube t^1. The specification speaks of *lateral* movement, but the drawing does not show it and the *entire object of a motor hanger* forbids it. There can be no lateral movement of this eye bolt, because it supports the nose of the motor, which is geared to the axle and the gearing of which must be kept *in proper alignment*. The only possible movement can be that which comes from about a quarter of an inch thrust of the axles in the axle boxes.

(l) Appellee, in this record, repudiates practically all the alleged substituting patents relied upon in the opinion of the Court of Appeals.

The opinion holds that links of the patents to Longstreth (locomotive), Heffernan (locomotive) and Graham, and to Brill & Curwen, can be substituted in the Thyng truck and thus constitute the truck in suit.

But the expert in this case, Mr. Freeman, relies upon none of these alleged substitutionary links. (See his summary in Rec., p. 195.)

And while in this passage he refers to "Peckham" in the same connection, he fails to state whether he means the Peckham 1896 patent that is too late or the Peckham 1891 patent referred to in the opinion.

Conversely, Mr. Freeman's alleged substitutionary links urged in this case are Spencer & Stidolph, Haskins, Peckham, Overbagh and Beach, and these patents, except perhaps Peckham, were not even mentioned in the opinion of the Circuit Court of Appeals.

It appears therefore that:

1. The expert in the North Jersey case relied upon Haskins substantially (with Thyng).

2. The Court of Appeals disregarded Haskins and relied upon Heffernan and others.

3. The expert in this case disagrees with the Court of Appeals and relies upon Spencer & Stidolph, Haskins, Overbagh and Beach.

Surely the controversy is open to *this Court* to clear up these conflicting doubts and render an authoritative judgment upon the validity of these valuable and important patents.

(m) The Uebelacker-Peckham Interference and Patent were overlooked by the Court of Appeals.

The Court of Appeals entirely overlooked the argument in favor of the validity of the patents in suit arising out of the Brill-Uebelacker interference and the language of the Uebelacker-Peckham patent.

And it entirely overlooked the argument bearing upon the infringement of the second patent based upon the Uebelacker-Peckham patent under which the appellee justifies. This justification imports that the appellee's truck in controversy is made in accordance with the disclosures of that patent. The truck of that patent undoubtedly has *ample longitudinal movement*. It is *ample* whether it be restrained or not. *Restraint* simply means *cushioned*. The restraint is *a part of the spring system* of the Uebelacker-Peckham truck. And precisely in the same way, in the truck in suit, there is a restrained movement by reason of the spiral spring. The only difference is that the restraint in the appellee's truck is under the point of support of the link; the restraint in the appellants' truck is below the side frame. Mechanically, they are the same.

(n) The Cases Cited in that Opinion.

The cases cited in that opinion seem to us inapplicable. Thus:

In *Smith* v. *Nichols* there was only a slight improvement in *weaving*.

Office Specialties Co. v. *Fenton* was only a case of rollers in book shelves.

The *Safety Truck* case applicable was an old truck put in front of a locomotive.

Stimpson v. *Woodman*, 10 Wall. 117, was a mere substitution on a roller of an old figured surface for a smooth surface.

The applicable authorities in point are, we submit, such cases as *Topliff* v. *Topliff*, 145 U. S. 156, and *Keystone Mfg.* v. *Adams*, 151 U. S. 139, and others cited above.

UNCERTAINTY OF PECKHAM COMPANY (REAL DEFENDANT) THROUGHOUT THIS LITIGATION AS TO THE PARTICULAR PRIOR PATENTS UPON WHICH TO BASE ITS DEFENCE.

The Peckham Company, real defendant, has shown throughout this litigation entire uncertainty as to what prior patents it means to depend upon.

Let us analyze the situation: The litigation has been as follows, chronologically:

1. The North Jersey case before Judge *Bradford.*

2. The Motion for a Preliminary Injunction against the Peckham Company itself, in the Southern District of New York (Lacombe, C. J.).

3. The C. C. A. for the Second Circuit, appeal in the Peckham case from Judge Lacombe's judgment.

4. The appeal in the North Jersey case (C. C. A., Third Circuit).

5. The case at bar.

This analysis will be made in order to show how little dependence the appellee in this entire litigation has really placed upon some of the patents which the Court of Appeals for the Third Circuit depended upon in rendering the decision which is now urged before this Court upon the ground of Comity.

That Court, starting with the Thyng patent as a *truck,* took up the "substitution" in the Thyng truck of spring links and in this connection considered only the following patents:

Longstreth,
Heffernan,
Graham,
Brill & Curwen,
Peckham, 1891,
Peckham, 1896.
The opinion did *not* refer to Haskins.

Let us see the varying views which the Peckham Company during this entire line of litigation have taken of these patents.

In the North Jersey case (below), the following were not deemed worth while setting up in the answer, but were afterwards brought in by an amended answer:

Heffernan,
Graham,
Brill & Curwen,
Peckham, 1896,

At the argument before Judge Bradford they relied upon

Longstreth,
Heffernan,
Brill & Curwen,
Peckham, '91,
Peckham, '96,

and also

Haskins,
Boughton,
Strong & Mitchell.

They did not even refer to Graham (much urged in the C. C. A. opinion).

After Judge Bradford's decree the Peckham Company applied to him for a rehearing (on the ground of after-discovered evidence), setting up these two patents which they certainly had always been familiar with:

Buck,
Overbagh.

After Judge Bradford's final disposal of the case, the Brill Company filed a bill and asked for a preliminary injunction in the Circuit Court for the Southern District of New York before Judge Lacombe. At this time the case before the Circuit Court of Appeals for the Third Circuit had not been argued or decided. No answer was filed before Judge

Lacombe. The affidavits for defendant set up the following:

Buck,
Overbagh,
Beach,
Davenport & Bridges,
Haskins,
Brill & Curwen.

The defendant cannot say that its failure to defend that case on Graham, Longstreth, Heffernan, Peckham, 1891, and Peckham, 1896, was for the reason that those patents had been considered before Judge Bradford, because they *did* set up before Judge Lacombe, Haskins and Brill & Curwen, *which were also old matter.*

On appeal of this case, before the Court of Appeals for the Second Circuit, from Judge Lacombe's judgment, the Peckham Company at the argument relied upon:

Buck,
Overbagh,
Beach,
Davenport & Bridges,
Haskins,
Brill & Curwen,

The appeal in the Court of Appeals for the Second Circuit was decided without consideration, upon the authority of the case in the Court of Appeals for the Third Circuit as soon as the latter decision was handed down.

In the argument for the defendant in the case at bar while various patents have been *set up* in the answer, the expert witnesses for the defendant have seriously discussed only the following:

Buck,
Davenport & Bridges,
Graham,
Brill & Curwen,
Haskins,
Peckham, '96,
Spencer & Stiddolph.

It appears therefore that of the six patents relied upon in the Circuit Court of Appeals for the Third Circuit:

Longstreth was disregarded by defendant in the Court above and below in the New York case.

Heffernan was not brought into the North Jersey case except by amendment, and it was omitted from the affidavits and argument in the New York case. Also it was not seriously considered by the expert in the case at bar.

Graham was only brought in by amendment in the North Jersey case, and it was not considered of sufficient importance to refer to in the affidavits or argument in the New York case in either court.

Brill & Curwen was brought in only by amendment in the North Jersey case.

Peckham, 1891, was not referred to in the affidavits or argument in the New York case in either court and does not appear to be seriously urged in this court.

Peckham, 1896, was brought in by amendment in the North Jersey case. It was not urged in either court in the New York Case.

Haskins, chiefly relied upon by the expert and counsel in the North Jersey case below and particularly in the argument in the Court of Appeals, was not referred to in the opinion of the Court of Appeals for the Third Circuit.

Spencer & Stiddolph, much urged by the expert in the case at bar, was brought in only by amendment in the North Jersey case, but was not relied upon in the argument in either court in that case, nor was it referred to by the Court of Appeals for the Third Circuit. It was not in the affidavits or argument in the New York cases, above or below.

Patents to

Buck,
Overbagh

were not brought forward in the North Jersey case until the petition for a rehearing in the court below.

Patents to

Beach,
Davenport & Bridges,

were not brought forward until they were set up as a defence in the case in New York. (The patents to Buck and Overbagh, which were brought before Judge Bradford in the North Jersey case below on the petition for a rehearing, were necessarily not before the Court of Appeals for the Third Circuit as the refusal by Judge Bradford of a rehearing for newly discovered evidence could not be the ground of appeal.)

Further doubt as to the defence of anticipation must, we submit, be raised by the fact that the defendant had one expert in the North Jersey and New York cases and have a different expert in this case—the two experts taking widely different views of the defence of anticipation.

These facts must create a doubt as to whether there is here shown any one prior patent which is a clear anticipation. Even Haskins, more relied upon than the others, was not mentioned by the Court of Appeals for the Third Circuit.

For these reasons, all of which are significant and many of which are fundamental and vital, we submit:

That the opinion and judgment of the learned Court of Appeals for the Third Circuit in the North Jersey case, while entitled to all "deference," should not, under the Comity rule, control the judgment of this Court.

That the case at bar differs from that case sufficiently in its *facts* to leave it open to the consideration of this Court as if entirely a new case.

That so considering it, this Court will find that this is a most meritorious invention, having very great commercial value in a most important art; that it was conceived early in the development of that art and really made the art what it now is; and that when offered to the public, it superseded, substantially, all other like devices in that art. That the (real) defendant, a business competitor of the patentee, at once appropriated it in its business to the practical exclusion of all other (like) products of its works and strove in the Patent Office for a year or more to secure to itself a patent on the device, thereby estopping itself from contest-

ing the validity of the appellants' letters patent, or its infringement thereof.

We submit that the (*pro forma*) decree of the Court below should be reversed and the record sent down with directions to reinstate the bill and enter a decree sustaining the validity of both the patents in suit and for an injunction and an account.

CHURCH & CHURCH,
for Appellants.

FRANCIS RAWLE,
of Counsel.